

SUPER[®]

SUPER[®] X7DWN+

USER'S MANUAL

Revision 1.0b

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Preface

This manual is written for system integrators, PC technicians and knowledgeable PC users. It provides information for the installation and use of the **SUPER** X7DWN+ motherboard.

About This Motherboard

The **SUPER** X7DWN+ supports dual Intel® Quad-Core and Dual-Core Xeon™ 5400 Series/5300LV Series/5200 Series/5100LV Series processors with a front side bus speed of up to 1.6 GHz. With two 64-bit Quad-Core and Dual-Core processors built-in, the X7DWN+ offers substantial functionality enhancements to the motherboards based on the Intel Core Microarchitecture core while remaining compatible with the IA-32 software. The features include Intel Virtualization Technology, Enhanced Intel SpeedStep technology, Advanced Transfer Cache, and Streaming SIMD Extensions 4.1 (SSE4.1). These features allow the motherboard to operate at much higher speeds with better power management in much safer thermal environments than the traditional motherboards. The X7DWN+ is ideal for high performance quad-processor or dual-processor (DP) workstation and enterprise server environments. Please refer to our web site (<http://www.supermicro.com/products/>) for updates on supported processors. This product is intended to be professionally installed.

Manual Organization

Chapter 1 describes the features, specifications and performance of the main board and provides detailed information about the chipset.

Chapter 2 provides hardware installation instructions. Read this chapter when installing the processor, memory modules and other hardware components into the system. If you encounter any problems, see **Chapter 3**, which describes troubleshooting procedures for the video, the memory and the system setup stored in the CMOS.

Chapter 4 includes an introduction to BIOS and provides detailed information on running the CMOS Setup utility.

Appendix A provides BIOS POST Codes. **Appendix B** and **Appendix C** list Windows OS and other software Installation Instructions.

Conventions Used in the Manual

Special attention should be given to the following symbols for proper installation and to prevent damage done to the components or injury to yourself:



Warning: Important information given to ensure proper system installation or to prevent damage to the components.

Note: Additional Information given to differentiate various models or to ensure correct system setup.

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Chapter 1

Introduction

1-1 Overview

Checklist

Congratulations on purchasing your computer motherboard from an acknowledged leader in the industry. Supermicro boards are designed with the utmost attention to detail to provide you with the highest standards in quality and performance. Check that the following items have all been included with your motherboard. If anything listed here is damaged or missing, contact your retailer.

The following items are included in the retail box.

- One (1) Supermicro Mainboard
- One (1) ribbon cable for IDE devices (CBL-0036L-03)
- One (1) floppy ribbon cable (CBL-0022L)
- Six (6) Serial ATA cables (CBL-0044Lx6)
- One (1) I/O backpanel shield (CSE-PT07L)
- One (1) Supermicro CD containing drivers and utilities
- One (1) User's/BIOS Manual

Contacting Supermicro

Headquarters

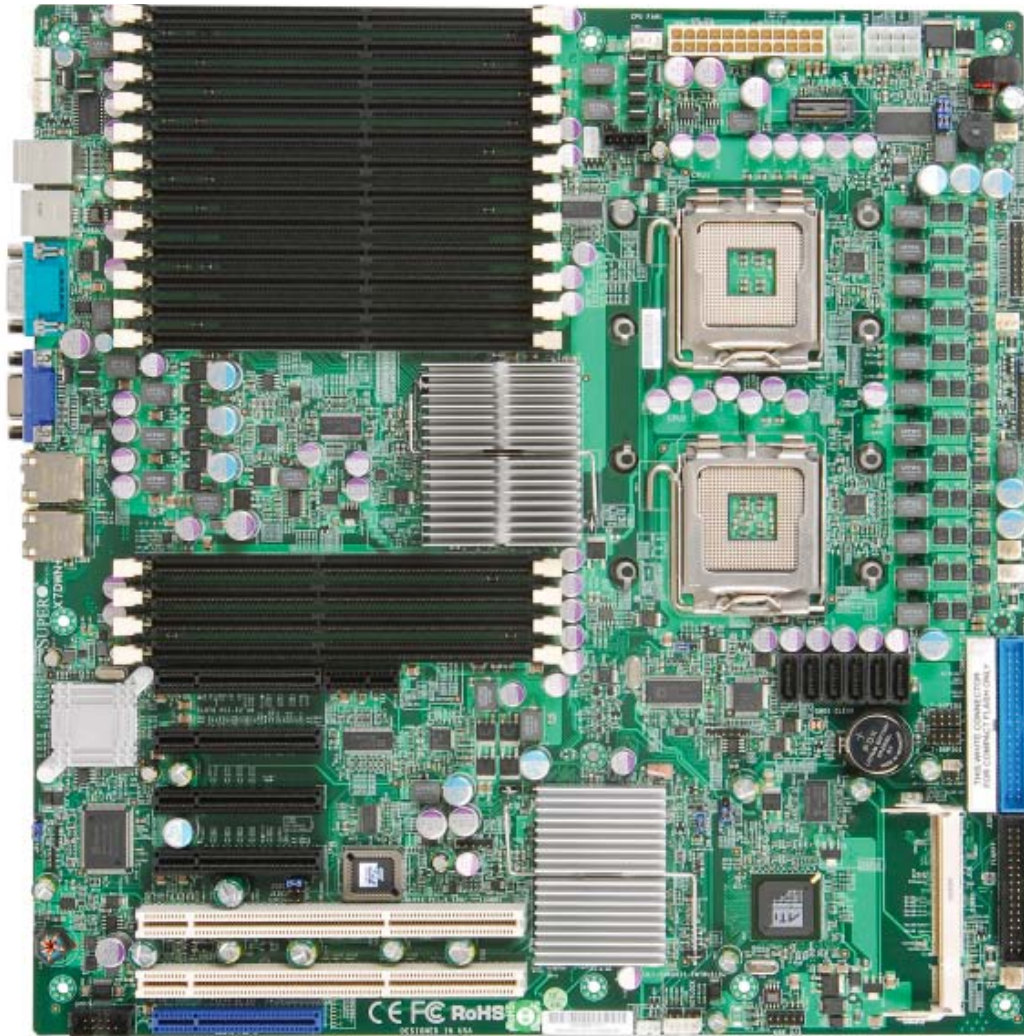
Address: Super Micro Computer, Inc.
980 Rock Ave.
San Jose, CA 95131 U.S.A.
Tel: +1 (408) 503-8000
Fax: +1 (408) 503-8008
Email: marketing@supermicro.com (General Information)
support@supermicro.com (Technical Support)
Web Site: www.supermicro.com

Europe

Address: Super Micro Computer B.V.
Het Sterrenbeeld 28, 5215 ML
's-Hertogenbosch, The Netherlands
Tel: +31 (0) 73-6400390
Fax: +31 (0) 73-6416525
Email: sales@supermicro.nl (General Information)
support@supermicro.nl (Technical Support)
rma@supermicro.nl (Customer Support)

Asia-Pacific

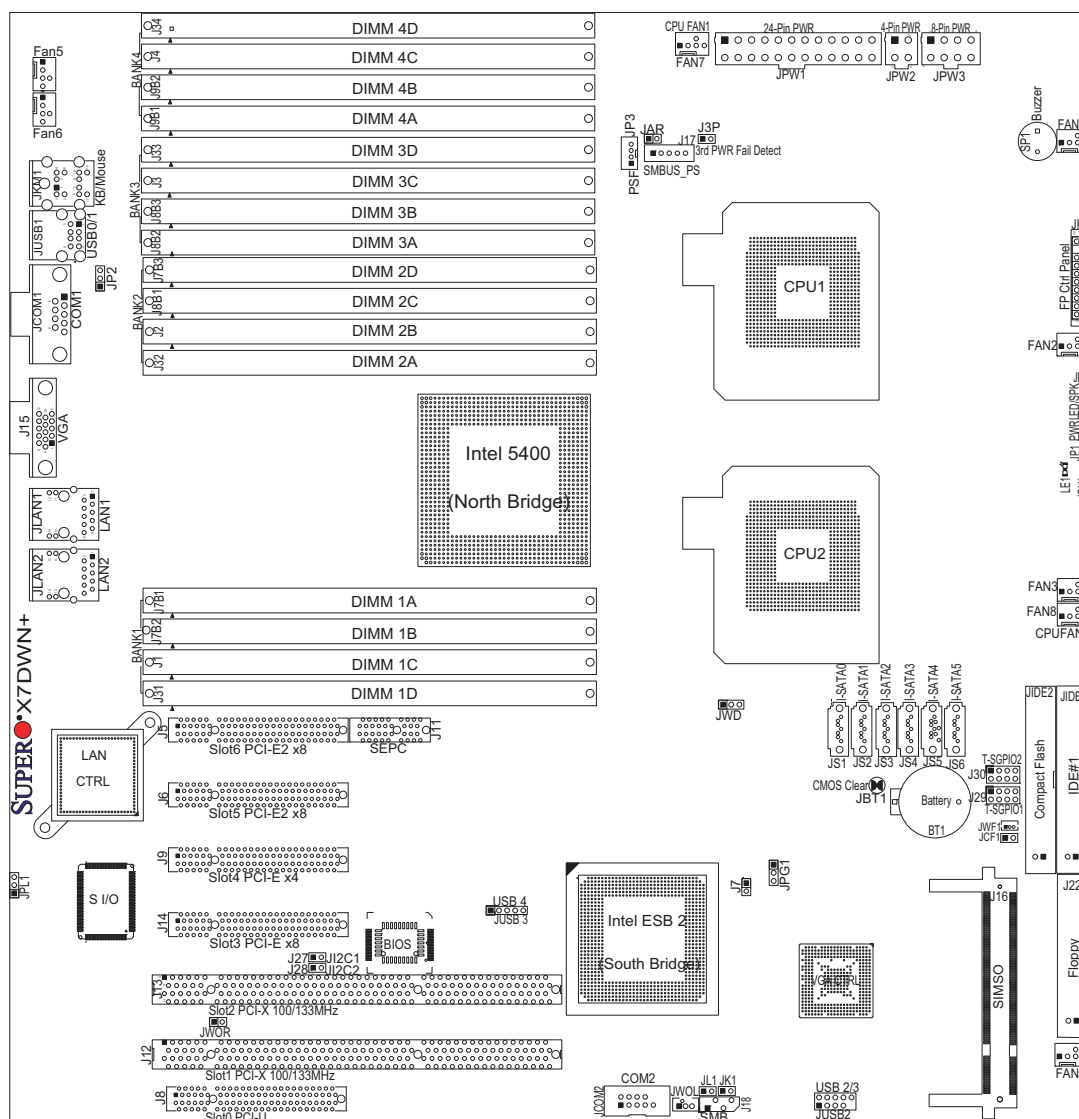
Address: Super Micro, Inc.
4F, No. 232-1 Liancheng Road
Chung-Ho 235, Taipei Hsien, Taiwan, R.O.C.
Tel: +886-(2) 8226-3990
Fax: +886-(2) 8226-3991
Web Site: www.supermicro.com.tw
Technical Support:
Email: support@supermicro.com.tw
Tel: 886-2-8228-1366, ext.132 or 139

SUPER[®] X7DWN+ Image

Note: The drawings and pictures shown in this manual were based on the latest PCB Revision available at the time of publishing of the manual. The motherboard you've received may or may not look exactly the same as the graphics shown in the manual.

SUPER[®] X7DOWN+ Motherboard Layout

(not drawn to scale)



Notes:

1. Jumpers not indicated are for test purposes only.
2. See Chapter 2 for detailed information on jumpers, I/O ports and JF1 front panel connections.
3. "■" indicates the location of Pin 1.
4. SEPC: Supermicro Enhanced Power Connector is specially designed to support the Supermicro 2U Riser Card only.
5. For the system to function properly, make sure to unplug the power cables before removing or installing components.
- 6 JIDE2 is for Compact Card Use only. For Compact Card to work properly, please enable JCF1 by putting a jumper on it, and connect JWF1 to a power supply connector.

Quick Reference (X7DWN+)

| Jumper | Description | Default Setting |
|---------------------------------------|---|------------------------|
| J3P | 3rd PWR Failure Detection | Off (Disabled) |
| JBT1 | CMOS Clear | (See Chapter 2) |
| JCF1 | Compact Card Master/Slave Select | On (Master) |
| JI ² C1/JI ² C2 | I ² C Bus to PCI-X/PCI-E Slots | Open (Disabled) |
| JP2 | Memory Voltage Select | Pins 1-2 (Auto) |
| JPG1 | VGA Enable | Pins 1-2 (Enabled) |
| JPL1 | GLAN1/2 Enable | Pins 1-2 (Enabled) |
| JWD | Watch Dog | Pins 1-2 (Reset) |

| Connector | Description |
|-------------------|---|
| COM1/COM2 | COM1/COM2 Serial Port/Connector (JCOM1/JCOM2) |
| FAN 1-8 | Fans 1-8 (Fans1-6, System Fans, Fans7/8: CPU Fans) |
| Floppy | Floppy Disk Drive Connector (J22) |
| IDE1/IDE2 | IDE1 Hard Drive (JIDE1)/Compact Flash Card (JIDE2) |
| I-SATA 0~5 | Intel SATA 0-5 Connectors (JS1~JS6) |
| JAR | Alarm Buzzer Reset |
| JD1 | PWR LED(pins1-3)/SpeakerHeader (pins 4-7) |
| JF1 | Front Control Panel Connector |
| JL1 | Chassis Intrusion Header |
| JOH1 | Overheat LED |
| JP3 | Power Fault (Power Supply Failure) (PSF) |
| JPW1 | Primary 24-Pin ATX PWR Connector |
| JPW2/JPW3 | +12V 4-pin PWR (JWP2)/+12V 8-pin PWR (JPW3) |
| JWF1 | Compact Card PWR Connector (Used if JFC1 is on.) |
| JWOL | Wake-on-LAN Header |
| JWOR | Wake-on-Ring Header |
| LAN1/LAN2 | G-bit Ethernet Ports 1/2 (JLAN1/JLAN2) |
| LE1 | PWR LED Indicator |
| SIMSO IPMI | SIM (Supermicro Intelligent MGMT) Slot(J16) |
| SMB | System Management Bus Header (J18) |
| SMB_PS | Power System Management (I ² C) Header (J17) |
| SP1 | Internal Buzzer |
| T-SGPIO1/T-SGPIO2 | Serial-Link General Purpose I/O Headers (J29/J30) |
| Keylock | Keylock Header (JK1) |
| USB 0/1 | Back Panel USB 0/1 (JPUSB1) |
| USB 2/3, USB4 | Front Panel USB 2/3 (JPUSB2), USB 4 (JPUSB3) |
| VGA | VGA Connector (J15) |

Motherboard Features

CPU

- Dual Intel® 64-bit LGA 771 Quad-Core/Dual-Core Xeon 5400 Series/5300LV Series/5200 Series/5100LV Series processors at a front side bus speed of up to 1.6 GHz

Memory

- 16 240-pin DIMM sockets support up to 128 GB DDR2 FBD (Fully Buffered) ECC 800/667/533 Memory (See Section 2-3 in Chapter 2 for DIMM Slot Population.)

Chipset

- Intel 5400 chipset, including: the 5400 Memory Control Hub (MCH) and the Enterprise South Bridge 2 (ESB2).

Expansion Slots

- Two PCI-E2 x8 slots (Slot5/slot6) (Gen. 2.0)
- One PCI-E x8 slot (Slot3)
- One PCI-E x4 slot (Slot4)
- Two 64-bit PCI-X 133/100MHz slots (Slot1/Slot2)
- One PCI-U (Universal) slot (Slot0) (Gen. 2.0)
- SIMSO Slot (J16)

BIOS

- 8 Mb Phoenix® Flash ROM
- PCI 2.2, ACPI 1.0, Plug and Play (PnP), USB Keyboard support and SMBIOS 2.3

PC Health Monitoring

- Onboard voltage monitors for CPU cores, chipset voltage, Memory voltage, +1.8V, +3.3V, +3.3V Standby, +5V, +5V Standby, +12V, -12V and Vbatt
- Fan status monitor with firmware control
- CPU/chassis temperature monitors
- Platform Environment Control Interface (PECI) ready
- CPU fan auto-off in sleep mode
- CPU slow-down on temperature overheat
- CPU thermal trip support for processor protection, power LED
- Power-up mode control for recovery from AC power loss
- Auto-switching voltage regulator for CPU cores
- System overheat/Fan Fail LED Indicator and control
- Chassis intrusion detection
- System resource alert via Supero Doctor III

ACPI Features

- Slow blinking LED for suspend state indicator
- Main switch override mechanism
- ACPI Power Management
- Keyboard Wakeup from Soft-off

Onboard I/O

- Intel ESB2 supports Six SATA2 ports (with RAID0, RAID1, RAID10, RAID5 supported in the Windows OS Environment)
- One SIMSO IPMI socket
- Intel 82575 Gigabit Ethernet controller supports two Giga-bit LAN ports
- One EIDE Ultra DMA/100 bus master interface
- One floppy port interface
- Two COM ports(1 header, 1 port)
- PS/2 mouse and PS/2 keyboard ports
- Up to five USB 2.0 (Universal Serial Bus) (2 ports, 3 Headers)
- ES1000 (32 MB) Graphic Controller supports one VGA connector
- Super I/O: Winbond W83627HF w/Hardware Monitor support: W83793, HECETA

Other

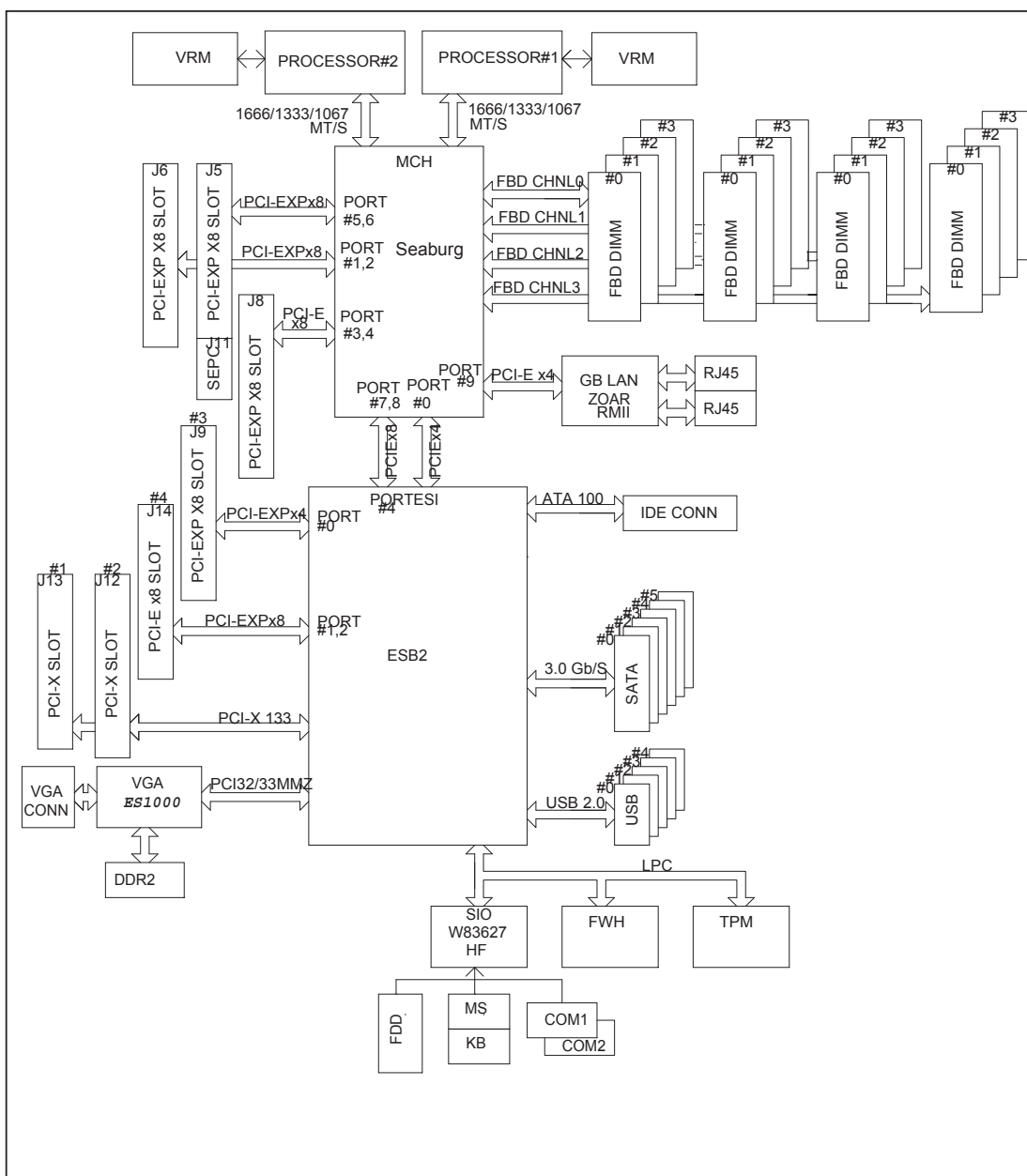
- External modem ring-on
- Wake-on-LAN (WOL)
- Wake-on-Ring (WOR)
- Console redirection
- Onboard Fan Speed Control by Thermal Management via BIOS

CD/Diskette Utilities

- BIOS flash upgrade utility and device drivers

Dimensions

- Ext. ATX 13.05" (L) x 13.68" (W) (331.5 mm x 347.47 mm)



Block Diagram of the 5400 Chipset

Note: This is a general block diagram. Please see the previous Motherboard Features pages for details on the features of each motherboard.

1-2 Chipset Overview

Built upon the functionality and the capability of the 5400 chipset, the X7DWN+ motherboard provides the performance and feature set required for quad-processor or dual-processor-based high-end systems with configuration options optimized for complex storage platforms. The 5400 chipset supports single or dual Intel Quad-Core/Dual-Core Xeon 5400 Series/5300LV Series/5200 Series/5100LV Series processor with front side bus speeds of up to 1.6 GHz. The chipset consists of the 5400 Memory Controller Hub (MCH) for the host bridge and the 631xESB/632xESB I/O Controller Hub (Enterprise South Bridge 2-ESB2) for the I/O subsystem.

The Intel 5400 MCH (North Bridge)

The 5400 MCH (North Bridge) provides two FSB processing interfaces, four fully buffered (FBD) DIMM memory channels, PCI-Express bus interfaces configurable to form x8 or x16 ports, an ESB2 South Bridge Interface (ESI) and SMBus Interfaces for system management, and DIMM Serial Presence Detect (SPD). The peak bandwidth for each FBD channel is 8 GB/s for DDR2 800/667 FBD memory, giving a total memory size of 128 MB for 4 FBD channels. The PCI-Express interfaces can be configured to form x8 or x16 ports that can operate up to Gen-2 speeds in x16 configuration for enhanced graphics applications.

The Intel 631xESB/632x ESB I/O Controller Hub-ESB2 (South Bridge)

The 631xESB/632xESB I/O Controller Hub (Enterprise South Bridge 2) integrates an Ultra ATA 100 Controller, six Serial ATA host controller ports, one EHCI host controller, six external USB 2.0 ports, an LPC interface controller, and a flash BIOS interface controller. Additionally, the ESB 2 chip also contains a PCI interface controller, Azalia/'97 digital controller, integrated LAN controller, an ASF controller and an ESI for communication with the MCH. The Intel ESB2 offers the data buffering and interface arbitration capabilities required for a high-end system to constantly operate efficiently and maintain peak performance.

Compliant with the ACPI platform, the ESB2 supports the Full-On, Stop-Grant, Suspend-to-RAM, Suspend-to-Disk, and Soft-Off power management states. Combined with the functionality offered by the onboard LAN controller, the ESB2 also supports alert systems for remote management.

With the 5400 chipset built in, the X7DWN+ offers a superb solution for intense computing and complex I/O environments, and is ideal for high-end server systems.

1-3 Special Features

Recovery from AC Power Loss

BIOS provides a setting for you to determine how the system will respond when AC power is lost and then restored to the system. You can choose for the system to remain powered off (in which case you must hit the power switch to turn it back on) or for it to automatically return to a power-on state. See the Advanced BIOS Setup section to change this setting. The default setting is **Last State**.

1-4 PC Health Monitoring

This section describes the PC health monitoring features of the X7DWN+. All have an onboard System Hardware Monitor chip that supports PC health monitoring. An onboard voltage monitor will scan the following voltages continuously: Onboard Voltage Monitors for CPU Core, Chipset Voltage, Memory Voltage, +1.8V, +5V, +3.3V, +3.3V Standby, +5V Standby, +12V, -12V and VBatt. Once a voltage becomes unstable, a warning is given or an error message is sent to the screen. Users can adjust the voltage thresholds to define the sensitivity of the voltage monitor.

Fan Status Monitor with Firmware Control

The PC health monitor can check the RPM status of the cooling fans. The onboard CPU and chassis fans are controlled by Thermal Management via BIOS (under Hardware Monitoring in the Advanced Setting).

Environmental Temperature Control

The thermal control sensor monitors the CPU temperature in real time and will turn on the thermal control fan whenever the CPU temperature exceeds a user-defined threshold. The overheat circuitry runs independently from the CPU. Once it detects that the CPU temperature is too high, it will automatically turn on the thermal fan control to prevent any overheat damage to the CPU. The onboard chassis thermal circuitry can monitor the overall system temperature and alert users when the chassis temperature is too high.

CPU Fan Auto-Off in Sleep Mode

The CPU fan becomes active when the power is turned on. It continues to operate when the system enters the Standby mode. When in the sleep mode, the CPU will not run at full power, thereby generating less heat.

System Resource Alert

This feature is available when used with Supero Doctor III in the Windows OS environment or used with Supero Doctor II in Linux. Supero Doctor is used to notify the user of certain system events. For example, you can also configure

Supero Doctor to provide you with warnings when the system temperature, CPU temperatures, voltages and fan speeds go beyond a pre-defined range.

1-5 ACPI Features

ACPI stands for Advanced Configuration and Power Interface. The ACPI specification defines a flexible and abstract hardware interface that provides a standard way to integrate power management features throughout a PC system, including its hardware, operating system and application software. This enables the system to automatically turn on and off peripherals such as CD-ROMs, network cards, hard disk drives and printers.

In addition to enabling operating system-directed power management, ACPI provides a generic system event mechanism for Plug and Play and an operating system-independent interface for configuration control. ACPI leverages the Plug and Play BIOS data structures while providing a processor architecture-independent implementation that is compatible with both Windows 2000 and Windows 2003 Operating Systems.

Slow Blinking LED for Suspend-State Indicator

When the CPU goes into a suspend state, the chassis power LED will start blinking to indicate that the CPU is in suspend mode. When the user presses any key, the CPU will wake-up and the LED will automatically stop blinking and remain on.

Main Switch Override Mechanism

When an ATX power supply is used, the power button can function as a system suspend button to make the system enter a SoftOff state. The monitor will be suspended and the hard drive will spin down. Pressing the power button again will cause the whole system to wake-up. During the SoftOff state, the ATX power supply provides power to keep the required circuitry in the system "alive." In case the system malfunctions and you want to turn off the power, just press and hold the power button for 4 seconds. This option can be set in the Power section of the BIOS Setup routine.

External Modem Ring-On

Wake-up events can be triggered by a device such as the external modem ringing when the system is in the SoftOff state. Note that external modem ring-on can only be used with an ATX 2.01 (or above) compliant power supply.

Wake-On-LAN (WOL)

Wake-On-LAN is defined as the ability of a management application to remotely power up a computer that is powered off. Remote PC setup, up-dates and asset tracking can occur after hours and on weekends so that daily LAN traffic is kept to a minimum and users are not interrupted. The motherboard has a 3-pin header (WOL) to connect to the 3-pin header on a Network Interface Card (NIC) that has

WOL capability. In addition, an onboard LAN controller can also support WOL without any connection to the WOL header. The 3-pin WOL header is to be used with a LAN add-on card only.

Note: Wake-On-LAN requires an ATX 2.01 (or above) compliant power supply.

1-6 Power Supply

As with all computer products, a stable power source is necessary for proper and reliable operation. It is even more important for processors that have high CPU clock rates.

The X7DWN+ can accommodate 24-pin ATX power supplies. Although most power supplies generally meet the specifications required by the CPU, some are inadequate. In addition, the 12V 4-pin and the 12V 8-pin power connections are also required to ensure adequate power supply to the system. Also your power supply must supply 1.5A for the Ethernet ports.

Note: The + 12V 8-pin CPU Power Connector (JPW3) is also required to support Intel 64-bit CPUs. Failure to provide this extra power will result in CPU PWR Failure. See Section 2-5 for details on connecting the power supply.

It is strongly recommended that you use a high quality power supply that meets ATX power supply Specification 2.02 or above. It must also be SSI compliant (For more information, please refer to the web site at <http://www.ssiforum.org/>). Additionally, in areas where noisy power transmission is present, you may choose to install a line filter to shield the computer from noise. It is recommended that you also install a power surge protector to help avoid problems caused by power surges.

1-7 Super I/O

The disk drive adapter functions of the Super I/O chip include a floppy disk drive controller that is compatible with industry standard 82077/765, a data separator, write pre-compensation circuitry, decode logic, data rate selection, a clock generator, drive interface control logic and interrupt and DMA logic. The wide range of functions integrated onto the Super I/O greatly reduces the number of components required for interfacing with floppy disk drives. The Super I/O supports 360 K, 720 K, 1.2 M, 1.44 M or 2.88 M disk drives and data transfer rates of 250 Kb/s, 500 Kb/s or 1 Mb/s. It also provides two high-speed, 16550 compatible serial communication ports (UARTs). Each UART includes a 16-byte send/receive FIFO, a programmable baud rate generator, complete modem control capability and a processor interrupt system. Both UARTs provide legacy speed with baud rate of up to 115.2 Kbps as well as an advanced speed with baud rates of 250 K, 500 K, or 1 Mb/s, which support higher speed modems.

The Super I/O supports one PC-compatible printer port (SPP), Bidirectional Printer Port (BPP), Enhanced Parallel Port (EPP) or Extended Capabilities Port (ECP).

The Super I/O provides functions that comply with ACPI (Advanced Configuration and Power Interface), which includes support of legacy and ACPI power management through an SMI or SCI function pin. It also features auto power management to reduce power consumption.

Notes

Chapter 2

Installation

2-1 Static-Sensitive Devices

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to your system board, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Handle the board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.
- Use only the correct type of onboard CMOS battery as specified by the manufacturer. Do not install the onboard battery upside down to avoid possible explosion.

Unpacking

The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

2-2 Processor and Heatsink Installation



When handling the processor package, avoid placing direct pressure on the label area of the fan.

Notes: 1. Always connect the power cord last and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.

2. Intel's boxed Xeon CPU package contains the CPU fan and heatsink assembly. If you buy a CPU separately, make sure that you use only Intel-certified multi-directional heatsink and fan.

3. The Intel Xeon LGA 771 heatsink and fan comes with a push-pin design and no tool is needed for installation.

4. Make sure to install the motherboard into the chassis before you install the CPU heatsink and fan.)

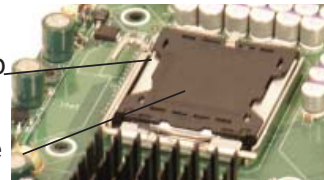
5. When purchasing an LGA 771 CPU or when receiving a motherboard with an LGA 771 CPU pre-installed, make sure that the CPU plastic cap is in place and none of the CPU pins are bent; otherwise, contact the retailer immediately.

6. Refer to the MB Features Section for more details on CPU support.

Installation of the LGA771 Processor

Socket Clip

Load Plate



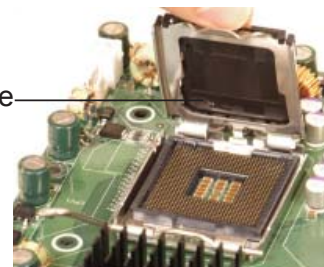
1. Press the socket clip to release the load plate, which covers the CPU socket, from its locking position.



2. Gently lift the socket clip to open the load plate.



Load Plate



3. Use your thumb and your index finger to hold the CPU at the North Center Edge and the South Center Edge of the CPU.

4. Align CPU Pin1 (the CPU corner marked with a triangle) against the socket corner marked with a triangle cutout.


5. Align the CPU key, the semi-circle cutout below a gold dot, against the socket key, which is the notch on the same side of the triangle cutout on the socket.

6. Once aligned, carefully lower the CPU straight down into the socket. (Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically. Do not rub the CPU against the surface or against any pins of the socket to avoid damaging the CPU or the socket.)

7. With the CPU inside the socket, inspect the four corners of the CPU to make sure that the CPU is properly installed.

8. Use your thumb to gently push the socket clip down to the clip lock.

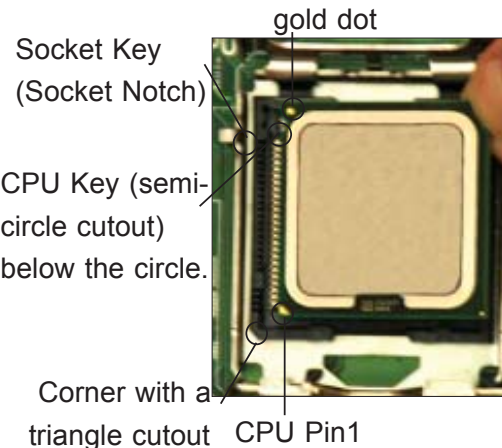
9. If the CPU is properly installed into the socket, the plastic cap will be automatically released from the load plate when the clip is pushed in the clip lock. Remove the plastic cap from the motherboard.

 **(Warning:** Please save the plastic cap. The motherboard must be shipped with the plastic cap properly installed to protect the CPU socket pins. Shipment without the plastic cap properly installed will cause damage to the socket pins.)

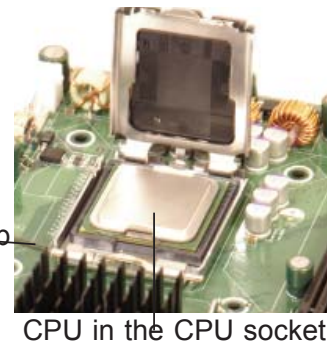
North Center Edge



South Center Edge



Socket clip



Plastic cap is released from the load plate if the CPU is properly installed.



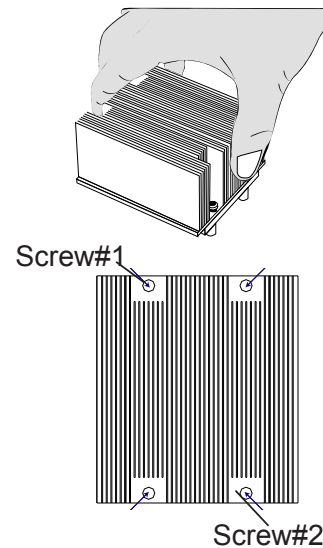
Installation of the Heatsink

CEK Heatsink Installation

1. Do not apply any thermal grease to the heatsink or the CPU die because the required amount has already been applied.
2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the retention mechanism.



3. Screw in two diagonal screws (ie the #1 and the #2 screws) until just snug (-do not fully tighten the screws to avoid possible damage to the CPU.)
4. Finish the installation by fully tightening all four screws.

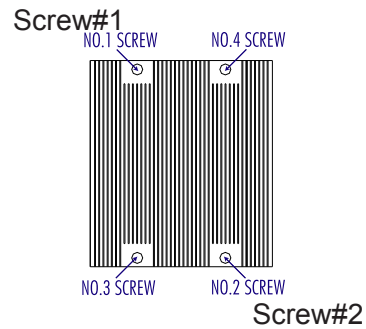


To Un-install the Heatsink



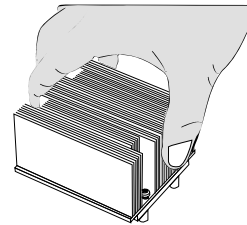
Warning: We do not recommend that the CPU or the heatsink be removed. However, if you do need to uninstall the heatsink, please follow the instructions below to uninstall the heatsink to prevent damage done to the CPU or the CPU socket.

1. Unscrew and remove the heatsink screws from the motherboard in the sequence as show in the picture on the right.



2. Hold the heatsink as shown in the picture on the right and gently wriggle the heatsink to loosen it from the CPU. (Do not use excessive force when wriggling the heatsink.)

3. Once the CPU is loosened, remove the heatsink from the CPU socket.



4. Clean the surface of the CPU and the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease on the surface before you re-install the CPU and the heatsink.

Mounting the Motherboard in the Chassis

All motherboards have standard mounting holes to fit different types of chassis. Make sure that the locations of all the mounting holes for both motherboard and chassis match. Make sure that the metal standoffs click in or are screwed in tightly. Then, use a screwdriver to secure the motherboard onto the motherboard tray. **Note:** some components are very close to the mounting holes. Please take precautionary measures to avoid damaging these components when you install the motherboard to the chassis.

2-3 Installing DIMMs

Note: Check the Supermicro web site for recommended memory modules.

CAUTION



Exercise extreme care when installing or removing DIMM modules to prevent any possible damage. Also note that the memory is interleaved to improve performance (see step 1).

DIMM Installation

1. Insert the desired number of DIMMs into the memory slots, starting with DIMM #1A. The memory scheme is interleaved, so you must install (a) pair(s) of modules of the same type and same speed at a time, beginning with Bank 1, Bank 2 and so on. For optimal memory performance, please install four modules at a time with the maximum of 16 modules. (See the Memory Installation Table Below.)
2. Insert each DIMM module vertically into its slot. Pay attention to the notch along the bottom of the module to prevent inserting the DIMM module incorrectly.
3. Gently press down on the DIMM module until it snaps into place in the slot. Repeat for all modules (see step 1 above).

Memory Support

The X7DWN+ supports up to 128 GB fully buffered (FBD) ECC DDR 2 800/667/533 in 16 DIMMs.

Note 1: Due to OS limitations, some operating systems may not show more than 4 GB of memory.

DIMM Module Population Configuration

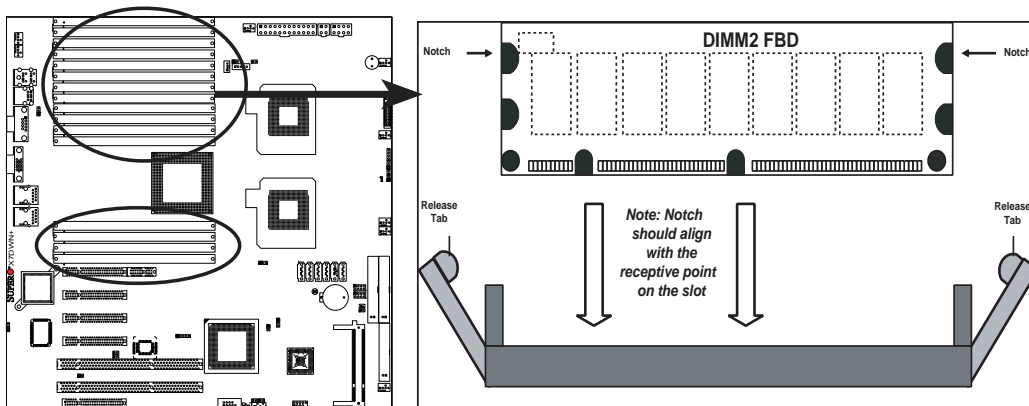
To optimize memory support, follow the table below for memory installation:

| Optimized DIMM Population Configurations | | | | | | | | | | | | | | | | |
|--|--------------------|-----|-----|-----|--------------------|-----|-----|-----|--------------------|-----|-----|-----|--------------------|-----|-----|--|
| | Branch 0 | | | | | | | | Branch 1 | | | | | | | |
| Number of DIMMs | Bank 1 (Channel 0) | | | | Bank 2 (Channel 1) | | | | Bank 3 (Channel 2) | | | | Bank 4 (Channel 3) | | | |
| 2 DIMMs | 1A | --- | --- | --- | 2A | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |
| 4 DIMMs | 1A | --- | --- | --- | 2A | --- | --- | --- | 3A | --- | --- | --- | 4A | --- | --- | |
| 8 DIMMs | 1A | 1B | --- | --- | 2A | 2B | --- | --- | 3A | 3B | --- | --- | 4A | 4B | --- | |
| 12 DIMMs | 1A | 1B | 1C | --- | 2A | 2B | 2C | --- | 3A | 3B | 3C | --- | 4A | 4B | 4C | |
| 16 DIMMs | 1A | 1B | 1C | 1D | 2A | 2B | 2C | 2D | 3A | 3B | 3C | 3D | 4A | 4B | 4C | |
| (* <u>Notes:</u> i. DIMM slot# specified: DIMM slot to be populated; “---”: DIMM slot not to be populated. ii. Both FBD 533 MHz, 667MHz and 800MHz DIMMs are supported; however, you need to use the memory modules of the same speed and of the same type on a motherboard. iii. Interleaved memory is supported when pairs of DIMM modules are installed. For optimal memory performance, please install pairs of memory modules in both Branch 0 and Branch 1 . iv. For memory to work properly, you need to follow the restrictions listed above.) | | | | | | | | | | | | | | | | |

Note 2: Due to memory allocation to system devices, memory remaining available for operational use will be reduced when 4 GB of RAM is used. The reduction in memory availability is disproportional. (See the Memory Availability Table below.)

| Possible System Memory Allocation & Availability | | |
|--|--------|--|
| System Device | Size | Physical Memory Remaining (-Available) (4 GB Total System Memory) |
| Firmware Hub flash memory (System BIOS) | 1 MB | 3.99GB |
| Local APIC | 4 KB | 3.99GB |
| Area Reserved for the chipset | 2 MB | 3.99GB |
| I/O APIC (4 Kbytes) | 4 KB | 3.99GB |
| PCI Enumeration Area 1 | 256 MB | 3.76GB |
| PCI Express (256 MB) | 256 MB | 3.51GB |
| PCI Enumeration Area 2 (if needed) -Aligned on 256-MB boundary- | 512 MB | 3.01GB |
| VGA Memory | 16 MB | 2.85GB |
| TSEG | 1 MB | 2.84GB |
| Memory available for the OS & other applications | | 2.84GB |

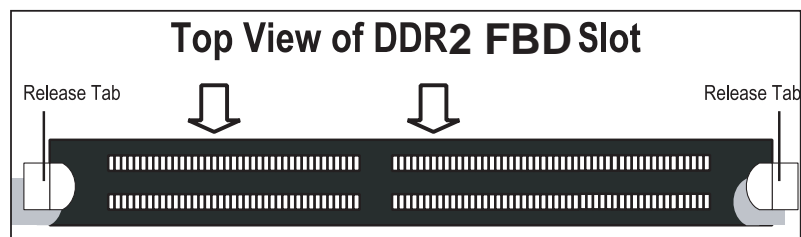
Installing and Removing DIMMs



To Install: Insert module vertically and press down until it snaps into place. Pay attention to the alignment notch at the bottom.

To Remove:

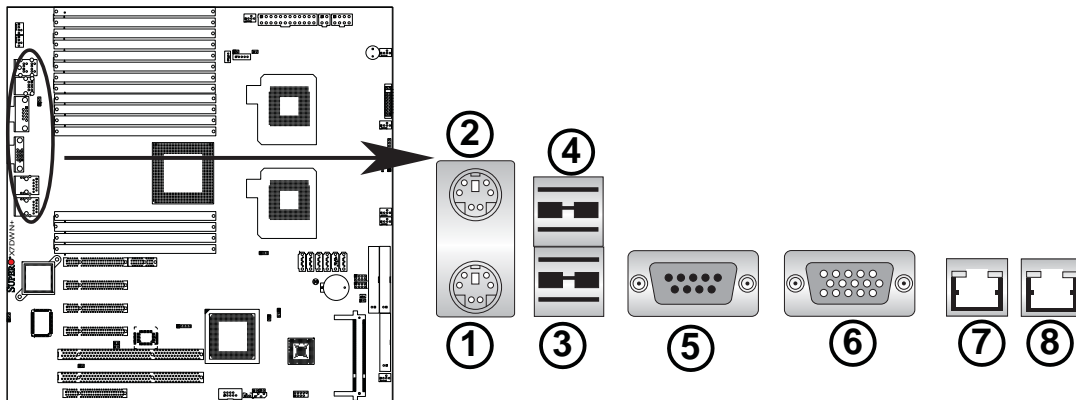
Use your thumbs to gently push the release tabs near both ends of the module. This should release it from the slot.



2-4 Control Panel Connectors/IO Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 2-3 below for the colors and locations of the various I/O ports.

A. Back Panel Connectors/IO Ports



Back Panel I/O Port Locations and Definitions

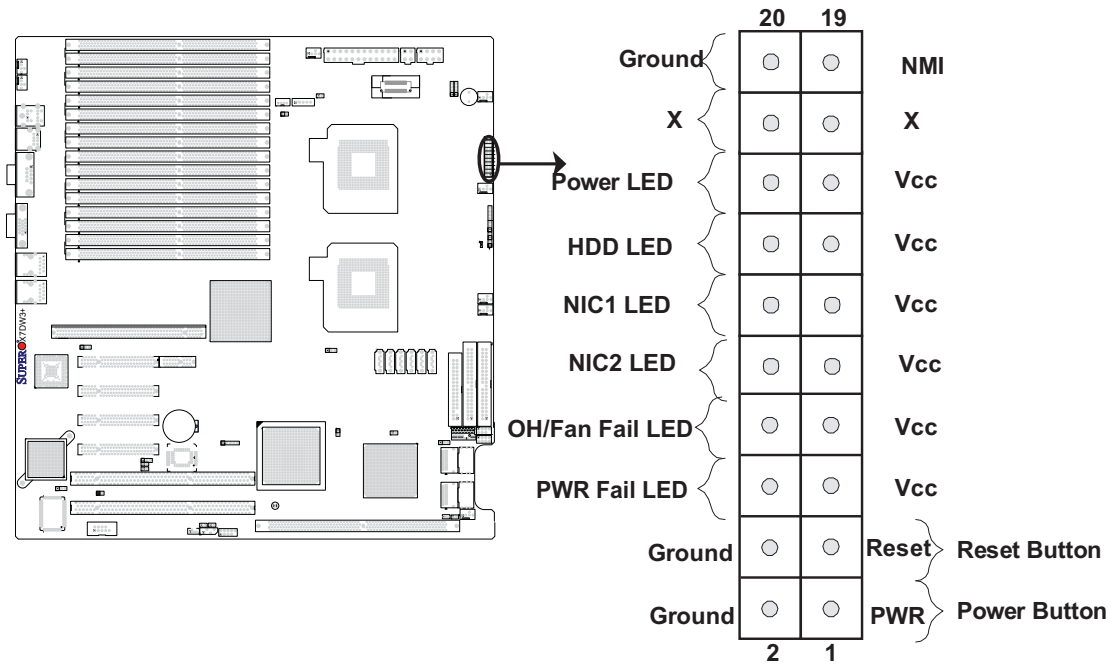
Back Panel Connectors

1. Keyboard (Purple)
 2. PS/2 Mouse (Green)
 3. Back Panel USB Port 0
 4. Back Panel USB Port 1
 5. COM Port 1 (Turquoise)
 6. VGA Port (Blue)
 7. Gigabit LAN 1
 8. Gigabit LAN 2
- (See Section 2-5 for details.)

B. Front Control Panel

JF1 contains header pins for various buttons and indicators that are normally located on a control panel at the front of the chassis. These connectors are designed specifically for use with Supermicro server chassis. See Figure 2-4 for the descriptions of the various control panel buttons and LED indicators. Refer to the following section for descriptions and pin definitions.

JF1 Header Pins



C. Front Control Panel Pin Definitions

NMI Button

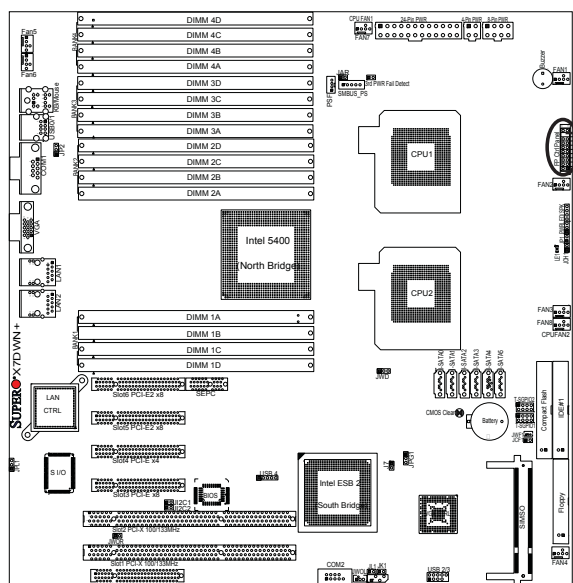
The non-maskable interrupt button header is located on pins 19 and 20 of JF1. Refer to the table on the right for pin definitions.

| NMI Button Pin Definitions (JF1) | |
|-------------------------------------|------------|
| Pin# | Definition |
| 19 | Control |
| 20 | Ground |

Power LED

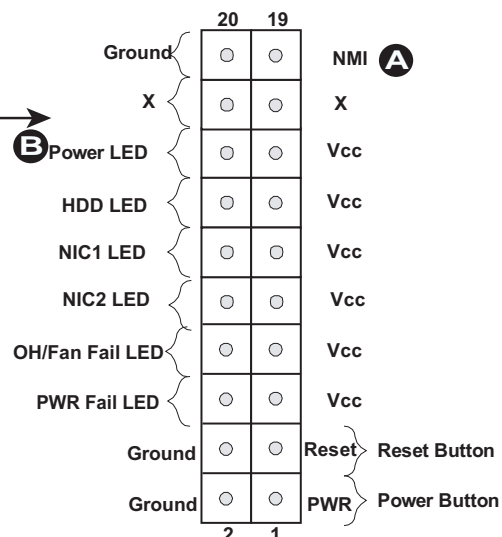
The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

| Power LED Pin Definitions (JF1) | |
|------------------------------------|------------|
| Pin# | Definition |
| 15 | +5V |
| 16 | Ground |



A. NMI

B. PWR LED



HDD LED

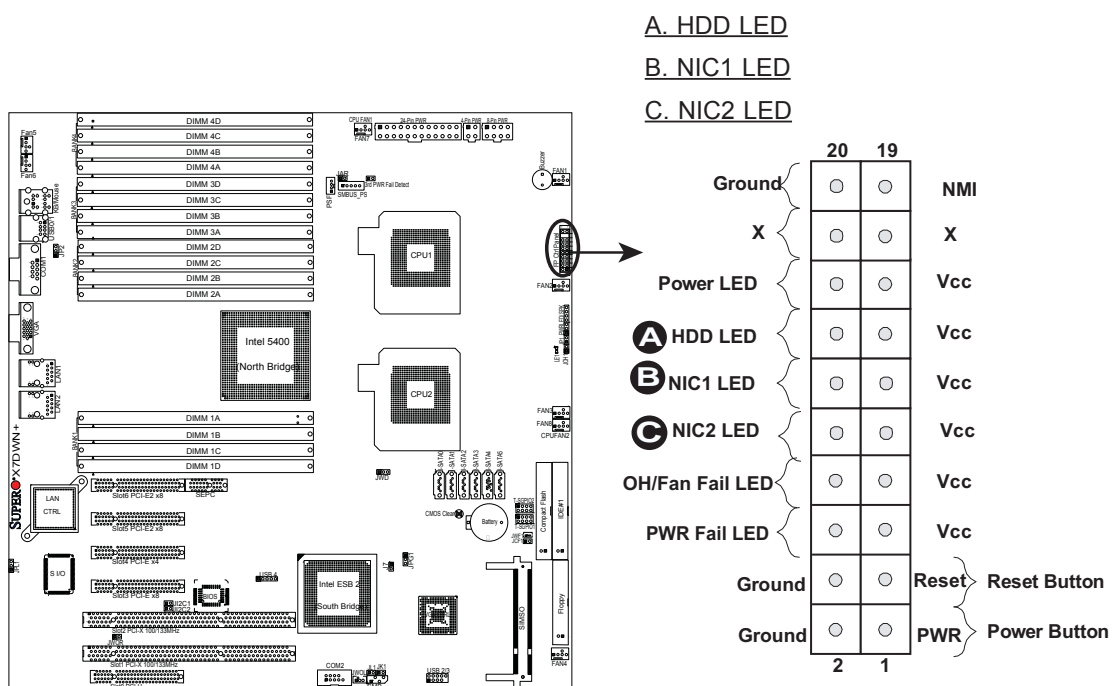
The HDD LED connection is located on pins 13 and 14 of JF1. Attach the hard drive LED cable here to display disk activity (for any hard drive activities on the system, including SAS, Serial ATA and IDE). See the table on the right for pin definitions.

| HDD LED Pin Definitions (JF1) | |
|----------------------------------|------------|
| Pin# | Definition |
| 13 | +5V |
| 14 | HD Active |

NIC1/NIC2 LED Indicators

The NIC (Network Interface Controller) LED connection for GLAN port1 is located on pins 11 and 12 of JF1, and the LED connection for GLAN Port2 is on Pins 9 and 10. Attach the NIC LED cables to display network activity. Refer to the table on the right for pin definitions.

| GLAN1/2 LED Pin Definitions (JF1) | |
|--------------------------------------|------------|
| Pin# | Definition |
| 9/11 | Vcc |
| 10/12 | Ground |



Overheat/Fan Fail LED (OH)

Connect an LED Cable to the OH/Fan Fail connection on pins 7 and 8 of JF1 to provide advanced warnings of chassis overheating or fan failure. Refer to the table on the right for pin definitions.

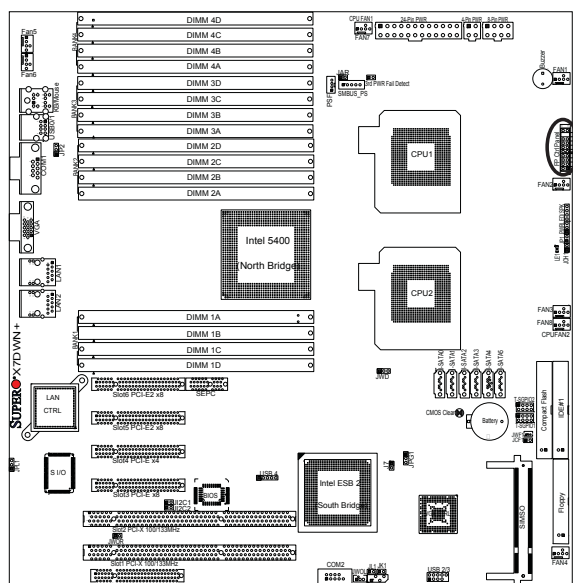
| OH/Fan Fail LED Pin Definitions (JF1) | |
|---------------------------------------|------------|
| Pin# | Definition |
| 7 | Vcc |
| 8 | Ground |

| OH/Fan Fail Indicator Status | |
|------------------------------|------------|
| State | Definition |
| Off | Normal |
| On | Overheat |
| Flashing | Fan Fail |

Power Fail LED

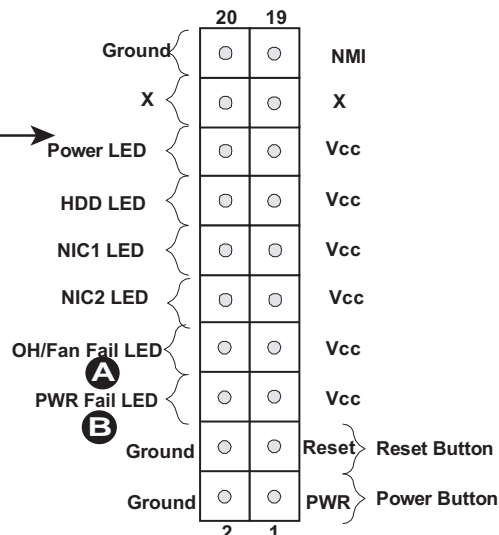
The Power Fail LED connection is located on pins 5 and 6 of JF1. Refer to the table on the right for pin definitions.

| PWR Fail LED Pin Definitions (JF1) | |
|------------------------------------|------------|
| Pin# | Definition |
| 5 | Vcc |
| 6 | Ground |



A. OH/Fan Fail LED

B. PWR Supply Fail



Reset Button

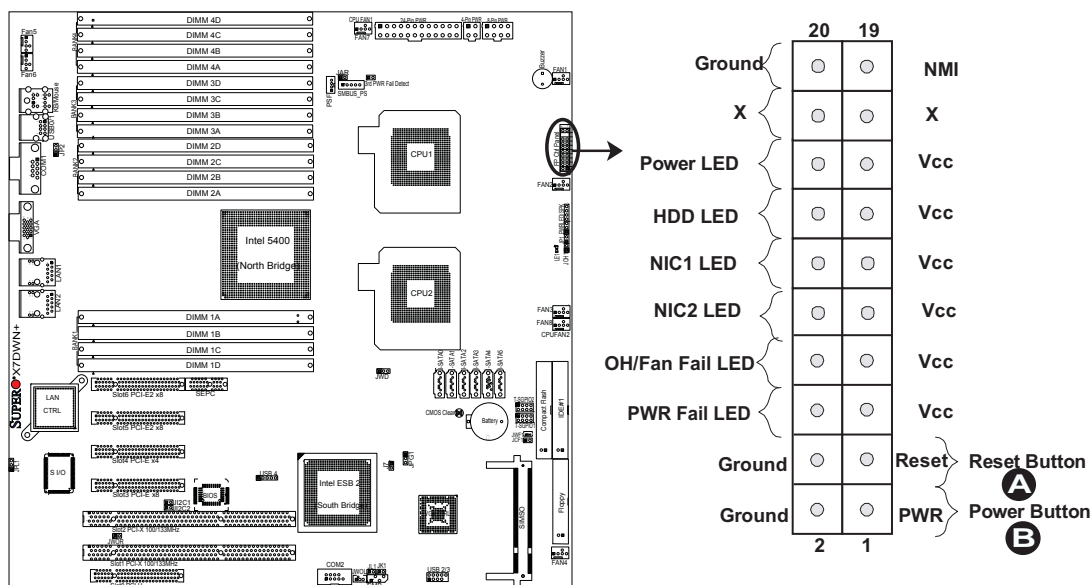
The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to a hardware reset switch on the computer case. Refer to the table on the right for pin definitions.

| Reset Button Pin Definitions (JF1) | |
|---------------------------------------|------------|
| Pin# | Definition |
| 3 | Reset |
| 4 | Ground |

Power Button

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (with a setting in the BIOS - see Chapter 4). To turn off the power when set to suspend mode, press the button for at least 4 seconds. Refer to the table on the right for pin definitions.

| Power Button Pin Definitions (JF1) | |
|---------------------------------------|-------------|
| Pin# | Definition |
| 1 | Signal |
| 2 | +3V Standby |



Universal Serial Bus (USB)

There are five USB 2.0 (Universal Serial Bus) ports/headers on the motherboard. Back Panel USB Ports 0 and 1 are located at JUSB1. The other three are Front Panel USB headers. USB Headers 2 and 3 are located at JUSB2, and USB Header 4 is located at JUSB3 to provide front panel access. See the tables on the right for pin definitions.

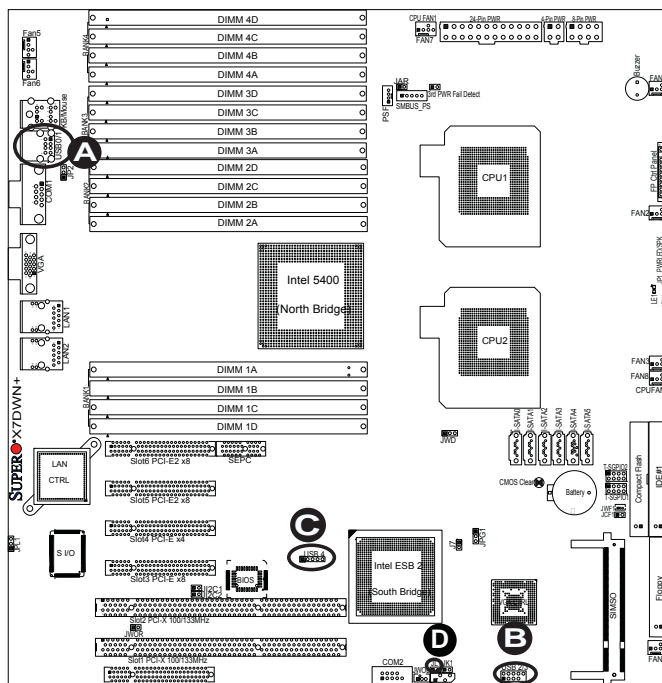
| Back Panel USB (USB0/1) | |
|-------------------------|-------------|
| Pin# | Definitions |
| 1 | +5V |
| 2 | PO- |
| 3 | PO+ |
| 4 | Ground |
| 5 | N/A |

| Front Panel USB Pin Definitions (USB 2/3/4) | | | |
|---|------------|-------|---------------|
| USB2/4 | | USB3 | |
| Pin # | Definition | Pin # | Definition |
| 1 | +5V | 1 | +5V |
| 2 | PO- | 2 | PO- |
| 3 | PO+ | 3 | PO+ |
| 4 | Ground | 4 | Ground |
| 5 | Key | 5 | No connection |

Chassis Intrusion

A Chassis Intrusion header is located at JL1 on the motherboard. Attach an appropriate cable from the chassis to inform you of a chassis intrusion when the chassis is opened.

| Chassis Intrusion Pin Definitions (JL1) | |
|---|-----------------|
| Pin# | Definition |
| 1 | Intrusion Input |
| 2 | Ground |



A. Backpanel USB 0/1

B. Front Panel USB 2/3

C. Front Panel USB 4

D. Chassis Intrusion

Fan Headers

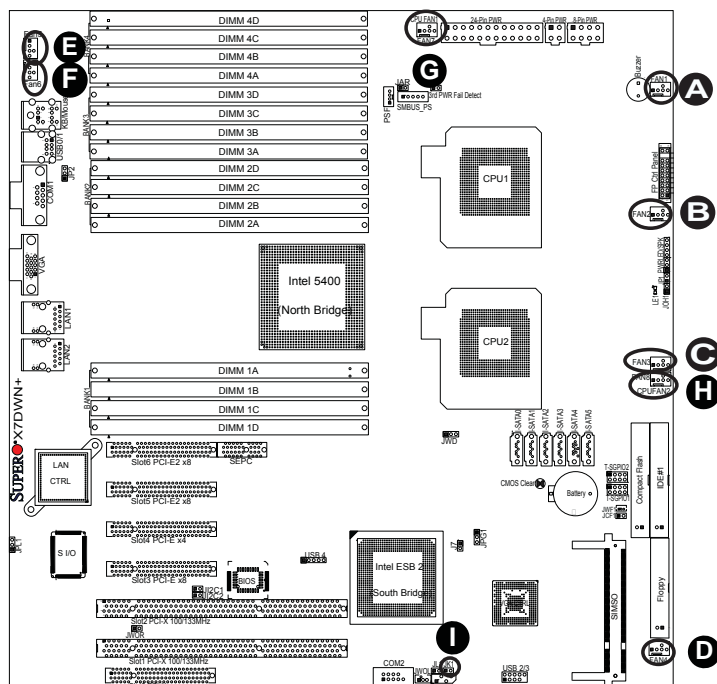
The X7DWN+ has six chassis/system fan headers (Fan1 to Fan6) and two CPU Fans (Fans 7/8). (**Note:** All 4-pin fans headers are backward compatible with the traditional 3-pin fans.) See the table on the right for pin definitions. The onboard fan speeds are controlled by Thermal Management via Hardware Monitoring in the Advanced Setting in BIOS. The Default setting is **Disabled**.

| Fan Header Pin Definitions (Fan1-8) | |
|--|----------------|
| Pin# | Definition |
| 1 | Ground |
| 2 | +12V |
| 3 | Tachometer |
| 4 | PWR Modulation |

Keylock

The keyboard lock connection is designated JK1. Utilizing this header allows you to inhibit any actions made on the keyboard, effectively "locking" it.

| Keylock Pin Definitions | |
|----------------------------|-------------|
| Pin# | Definition |
| 1 | Ground |
| 2 | Keylock R-N |



- A. Fan 1
- B. Fan 2
- C. Fan 3
- D. Fan 4
- E. Fan 5
- F. Fan 6
- G. Fan 7 (CPU Fan 1)
- H. Fan 8 (CPU Fan 2)
- I. Keylock

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse are located at JKM1. See the table on the right for pin definitions. (The mouse port is above the keyboard port. See the table on the right for pin definitions.)

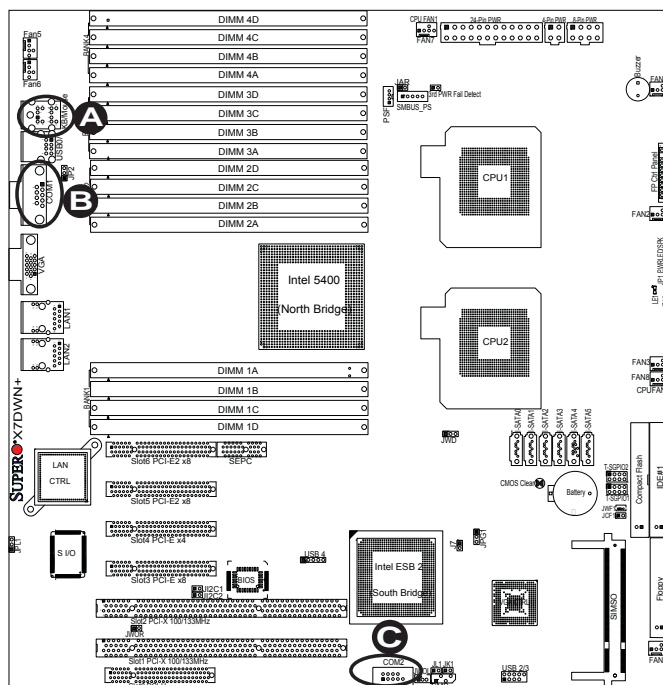
| PS/2 Keyboard and Mouse Port Pin Definitions | |
|--|------------|
| Pin# | Definition |
| 1 | Data |
| 2 | NC |
| 3 | Ground |
| 4 | VCC |
| 5 | Clock |
| 6 | NC |

Serial Ports

COM1 is a connector located on the I/O Backpanel, and COM2 is a header located at JCOM2. See the table on the right for pin definitions.

| Serial Port Pin Definitions (COM1/COM2) | | | |
|---|------------|-------|------------|
| Pin # | Definition | Pin # | Definition |
| 1 | CDC | 6 | DSR |
| 2 | RXD | 7 | RTS |
| 3 | TXD | 8 | CTS |
| 4 | DTR | 9 | RI |
| 5 | Ground | 10 | NC |

(Pin 10 is available on COM2 only. NC: No Connection.)



A. Keyboard/Mouse

B. COM1

C. COM2

Wake-On-Ring

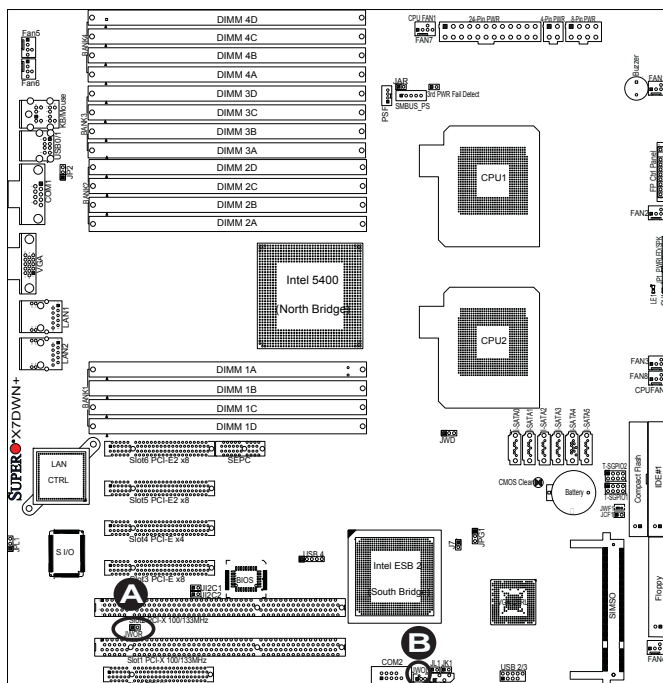
The Wake-On-Ring header is designated JWOR. This function allows your computer to receive and be "awakened" by an incoming call to the modem when the system is in the suspend state. See the table on the right for pin definitions. You must have a Wake-On-Ring card and cable to use this feature.

| Wake-On-Ring Pin Definitions (JWOR) | |
|---|------------|
| Pin# | Definition |
| 1 | Ground |
| 2 | Wake-up |

Wake-On-LAN

The Wake-On-LAN header is located at JWOL on the motherboard. See the table on the right for pin definitions. (You must also have a LAN card with a Wake-On-LAN connector and cable to use this feature.)

| Wake-On-LAN Pin Definitions (JWOL) | |
|--|-------------|
| Pin# | Definition |
| 1 | +5V Standby |
| 2 | Ground |
| 3 | Wake-up |



A. WOR

B. WOL

GLAN 1/2 (Giga-bit Ethernet Ports)

Two G-bit Ethernet ports are located at JLAN1 and JLAN2 on the I/O backplane. These ports accept RJ45 type cables.



GLAN1

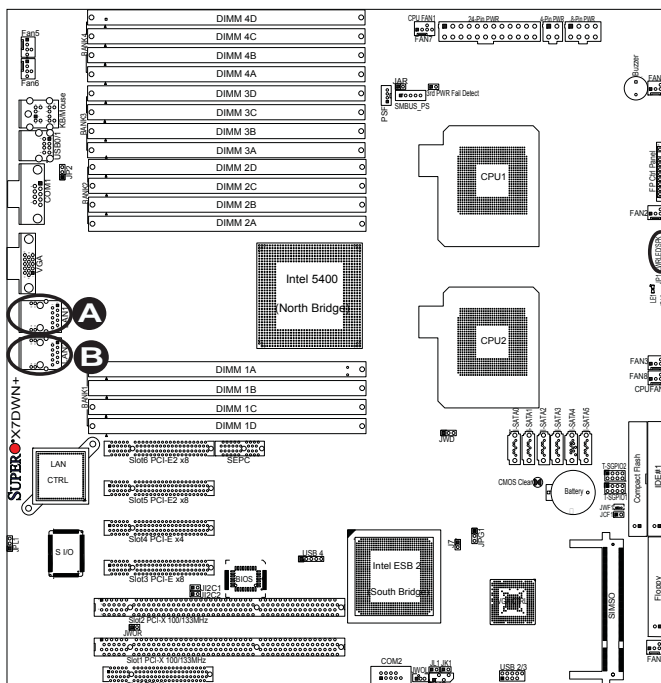


GLAN2

Power LED/Speaker

On the JD1 header, pins 1-3 are used for power LED indication, and pins 4-7 are for the speaker. See the table on the right for speaker pin definitions. **Note:** The speaker connector pins (4-7) are for use with an external speaker. If you wish to use the onboard speaker, you should close pins 6-7 with a jumper.

| Speaker Connector Pin Definitions | |
|-----------------------------------|------------------|
| Pin Setting | Definition |
| Pins 6-7 | Internal Speaker |
| Pins 4-7 | External Speaker |



A. GLAN1

B. GLAN2

C. PWR LED/Speaker

Power Supply Failure

Connect a cable from your power supply to the Power Supply Fail header (PSF/JP3) to provide warnings of power supply failure. This warning signal is passed through the PWR_LED pin to indicate a power failure on the chassis. See the table on the right for pin definitions.

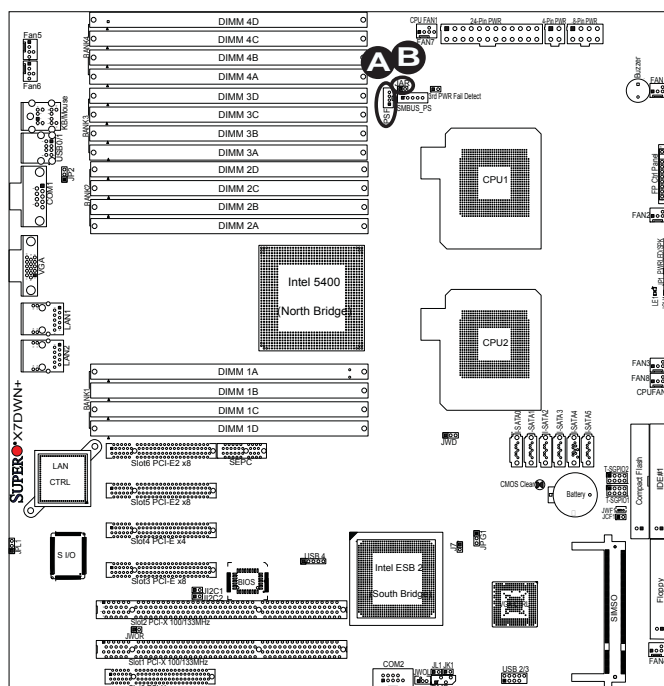
| PWR Supply Failure Pin Definitions | |
|---------------------------------------|---------------------|
| Pin# | Definition |
| 1 | PWR 1: Fail |
| 2 | PWR 2: Fail |
| 3 | PWR 3: Fail |
| 4 | Signal: Alarm Reset |

Note: This feature is only available when using Supermicro redundant power supplies.

Alarm Reset

If three power supplies are installed and Alarm Reset (JAR) is enabled, the system will notify you when any of the three power modules fails. Connect JAR to a micro-switch to enable you to turn off the alarm that is activated when a power module fails. See the table on the right for pin definitions.

| Alarm Reset Pin Definitions | |
|--------------------------------|------------|
| Pin Setting | Definition |
| Pin 1 | Ground |
| Pin 2 | +5V |



A. Power Supply Failure

B. Alarm Reset

Overheat LED/Fan Fail (JOH1)

The JOH1 header is used to connect an LED indicator to provide warnings of chassis overheating or fan failure. This LED will blink when a fan failure occurs. Refer to the table on right for pin definitions.

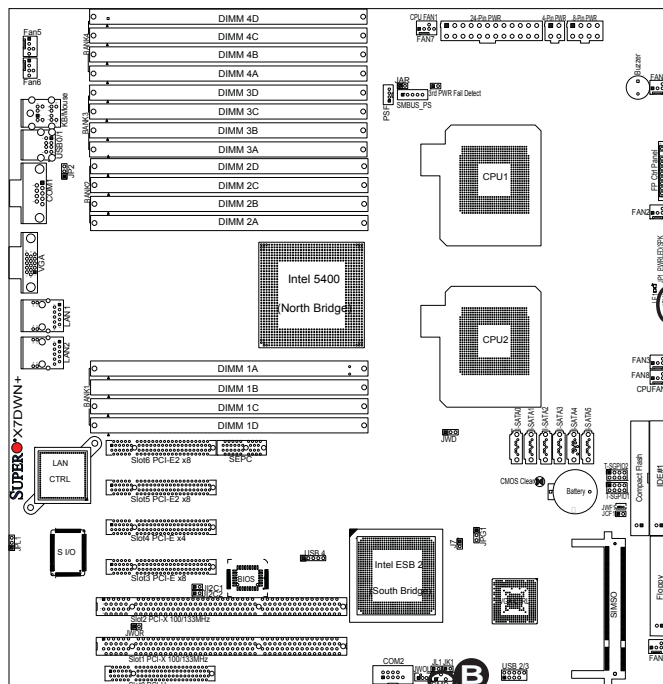
| Overheat LED Pin Definitions | |
|------------------------------|------------|
| Pin# | Definition |
| 1 | 5vDC |
| 2 | OH Active |

| OH/Fan Fail LED | |
|-----------------|----------|
| State | Message |
| Solid | Overheat |
| Blinking | Fan Fail |

SMB

A System Management Bus header is located at J18. Connect the appropriate cable here to utilize SMB on your system.

| SMB Header Pin Definitions | |
|----------------------------|---------------|
| Pin# | Definition |
| 1 | Data |
| 2 | Ground |
| 3 | Clock |
| 4 | No Connection |



A. OH/Fan Fail LED

B. SMB

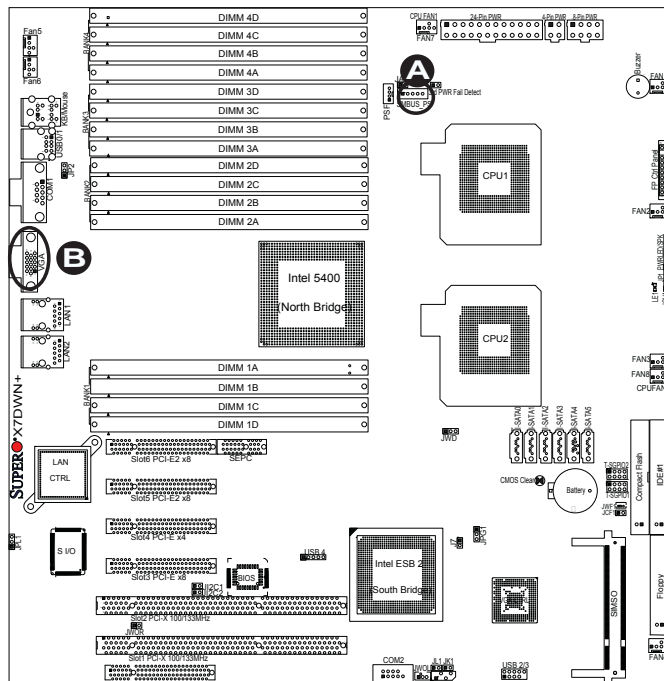
Power SMB (I²C) Connector

Power SMB (I²C) Connector (J17) monitors power supply, fan and system temperatures. See the table on the right for pin definitions.

| PWR SMB Pin Definitions | |
|----------------------------|------------|
| Pin# | Definition |
| 1 | Clock |
| 2 | Data |
| 3 | PWR Fail |
| 4 | Ground |
| 5 | +3.3V |

VGA Connector

A VGA connector is located at J15 on the I/O backplane. Refer to the board layout below for the location.



A. PWR SMB

B. VGA

Compact Flash Card PWR Connector

A Compact Flash Card Power Connector is located at JWF1. For the Compact Flash Card or the Compact Flash Jumper (JCF1) to work properly, you will need to first connect the Compact Flash Card power cable to JWF1. Refer to the board layout below for the location.

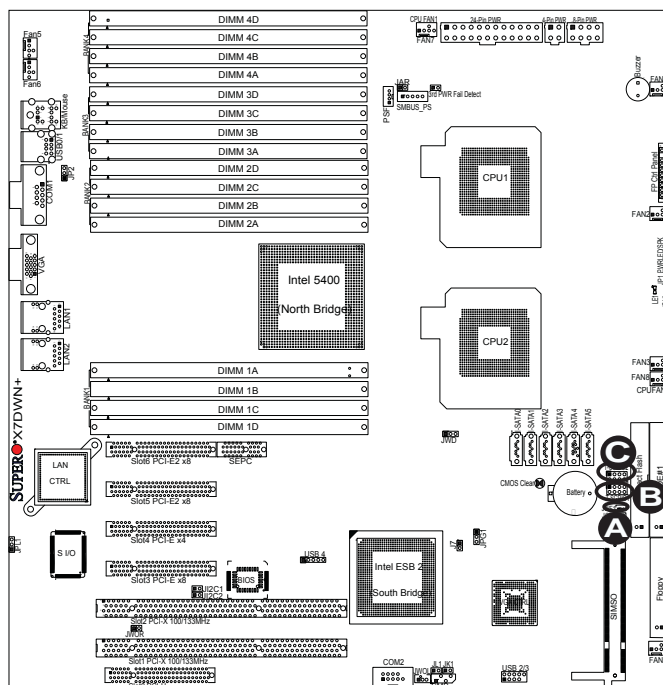
| Compact Flash Card PWR Connector | |
|----------------------------------|----------------------------------|
| Setting | Definition |
| On | Compact Flash Power On (Default) |
| Off | Compact Flash Power Off |

T-SGPIO Headers

Two SGPIO (Serial-Link General Purpose Input/Output) headers are located at J29 and J30 on the motherboard. These headers support serial link interfaces for the onboard SATA and SAS connectors. See the table on the right for pin definitions. Refer to the board layout below for the location.

| T-SGPIO Pin Definitions | | | |
|-------------------------|------------|-----|------------|
| Pin# | Definition | Pin | Definition |
| 1 | NC | 2 | NC |
| 3 | Ground | 4 | Data |
| 5 | Load | 6 | Ground |
| 7 | NC | 8 | NC |

Note: NC= No Connections



A. Compact Flash PWR

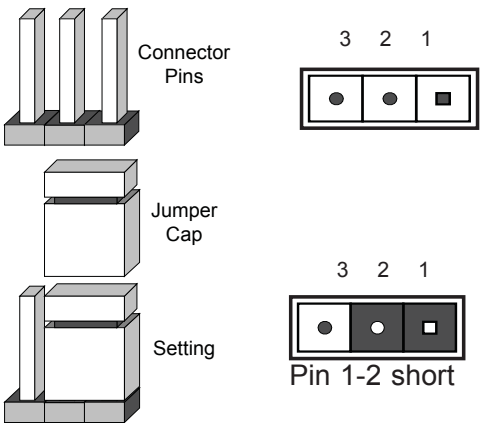
B. SGPIO Header#1

C. SGPIO Header#2

2-6 Jumper Settings

Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the motherboard layout pages for jumper locations.

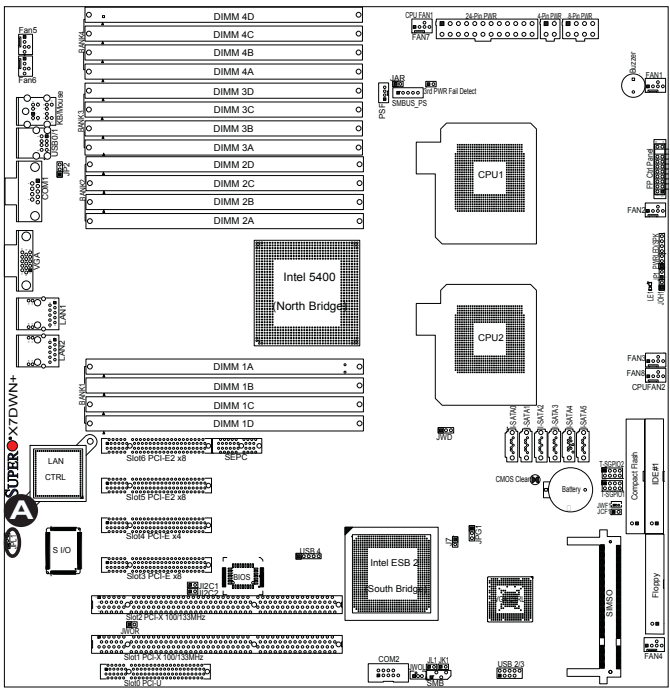


Note: On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.

GLAN Enable/Disable

JPL1 enables or disables the GLAN Port1/GLAN Port2 on the motherboard. See the table on the right for jumper settings. The default setting is **Enabled**.

| GLAN Enable Jumper Settings | |
|-----------------------------|-------------------|
| Pin# | Definition |
| 1-2 | Enabled (default) |
| 2-3 | Disabled |



CMOS Clear

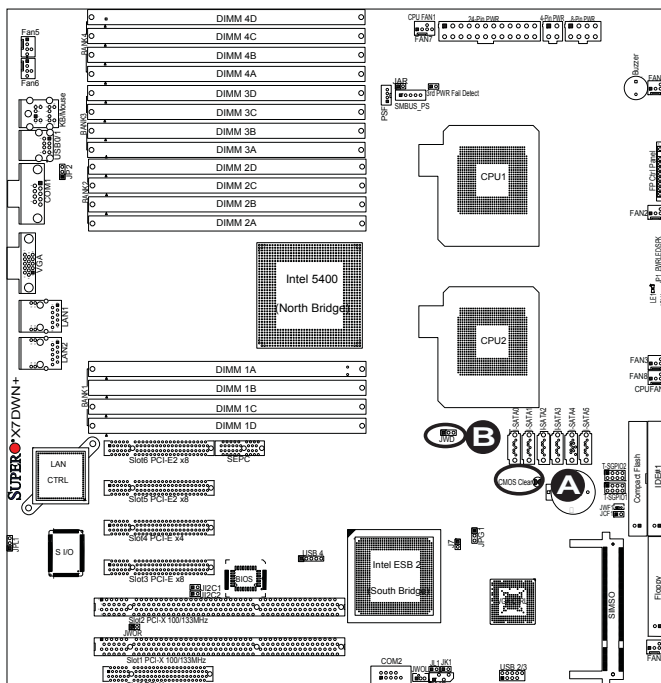
JBT1 is used to clear CMOS. Instead of pins, this "jumper" consists of contact pads to prevent the accidental clearing of CMOS. To clear CMOS, use a metal object such as a small screwdriver to touch both pads at the same time to short the connection. Always remove the AC power cord from the system before clearing CMOS. **Note:** For an ATX power supply, you must completely shut down the system, remove the AC power cord and then short JBT1 to clear CMOS.



Watch Dog Enable/Disable

Watch Dog (JWD) is a system monitor that can reboot the system when a software application hangs. Close Pins 1-2 to reset the system if an application hangs. Close Pins 2-3 to generate a non-maskable interrupt signal for the application that hangs. See the table on the right for jumper settings. Watch Dog must also be enabled in the BIOS.

| Watch Dog Jumper Settings (JWD) | |
|---------------------------------|-----------------|
| Jumper Setting | Definition |
| Pins 1-2 | Reset (default) |
| Pins 2-3 | NMI |
| Open | Disabled |



A. Clear CMOS

B. Watch Dog Enable

VGA Enable/Disable

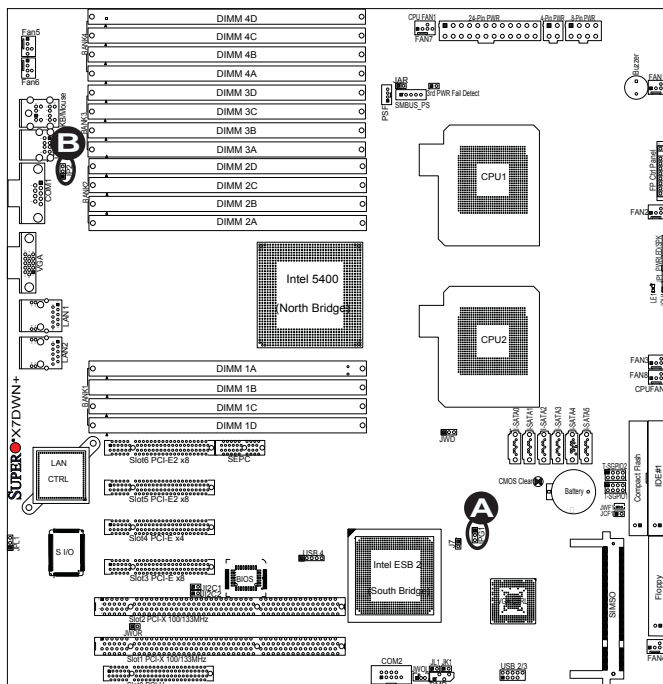
JPG1 allows you to enable or disable the VGA Controller. The default position is on pins 1 and 2 to use this feature. See the table on the right for jumper settings.

| VGA Enable/Disable Jumper Settings (JPG1) | |
|---|------------|
| Jumper Setting | Definition |
| Pins 1-2 | Enabled |
| Pins 2-3 | Disabled |

Memory Voltage Select

Jumper JP2 allows the user to select memory voltage for the motherboard. See the table on the right for jumper settings.

| Memory Voltage Select Jumper Settings | |
|---------------------------------------|----------------|
| Setting | Definition |
| 1-2 | Auto (default) |
| 2-3 | 1.5V |
| Off | 1.8V |



A. VGA Enable

B. Memory Voltage Select

3rd PWR Supply PWR Fault Detection (J3P)

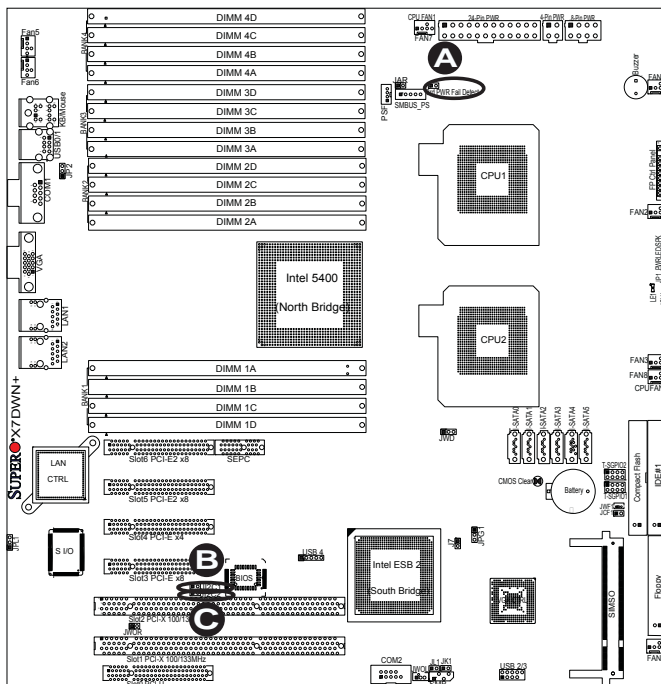
The system can notify you in the event of a power supply failure. This feature is available when three power supply units are installed in the chassis with one acting as a backup. If you only have one or two power supply units installed, you should disable this (the default setting) with J3P to prevent the false alarm.

| 3rd PWR Supply PWR Fault Jumper Settings | |
|--|--------------------|
| Jumper Setting | Definition |
| Closed | Enabled |
| Open | Disabled (Default) |

I²C Bus to PCI-X/PCI-Exp. Slots

Jumpers I²C1 and I²C2, located at J27 & J28, allow you to connect the System Management Bus (I²C) to PCI-X/PCI-E slots. The default setting is Open to disable the connection. See the table on the right for jumper settings.

| I ² C to PCI-S/PCI/Exp Jumper Settings | |
|---|--------------------|
| Jumper Setting | Definition |
| Closed | Enabled |
| Open | Disabled (Default) |



A. 3rd PWR Failure Detection

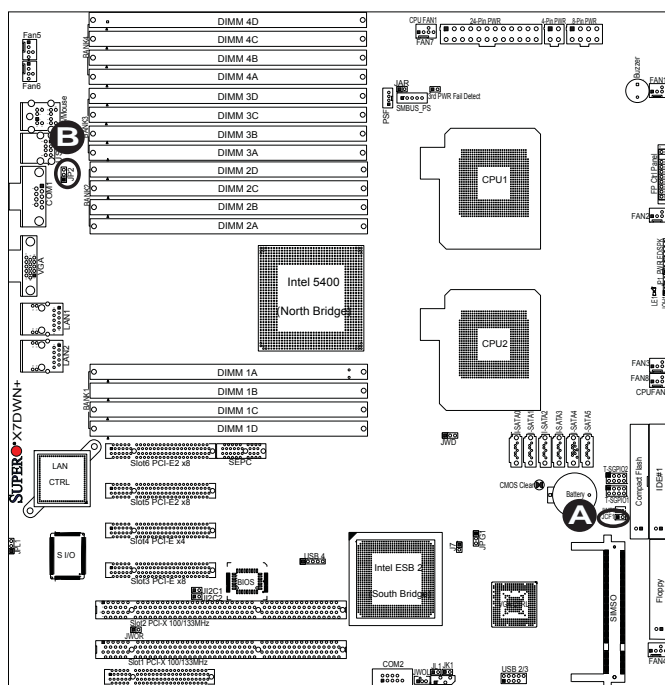
B. I²C1

C. I²C2

Compact Flash Master/Slave Select

A Compact Flash Master (Primary)/Slave (Secondary) Selection Jumper is located at JCF1. Close this jumper to enable Compact Flash Card. For the Compact Flash Card or the Compact Flash Jumper (JCF1) to work properly, you will need to first connect the Compact Flash Card power cable to JWF1. Refer to the board layout below for the location.

| Compact Flash Card Master/Slave Select | |
|--|-------------------|
| Jumper | Definition |
| Open | Slave (Secondary) |
| Closed | Master (Primary) |

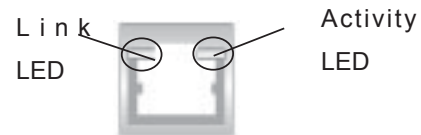


- A. Compact Flash Master/Slave Select
- B. Memory Select

2-7 Onboard Indicators

GLAN LEDs

There are two GLAN ports on the motherboard. Each Gigabit Ethernet LAN port has two LEDs. The yellow LED indicates activity, while the Link LED may be green, amber or off to indicate the speed of the connection. See the tables at right for more information.



Rear View (when facing the rear side of the chassis)

GLAN Activity Indicator LED Settings

| Color | Status | Definition |
|--------|----------|------------|
| Yellow | Flashing | Active |

GLAN Link Indicator LED Settings

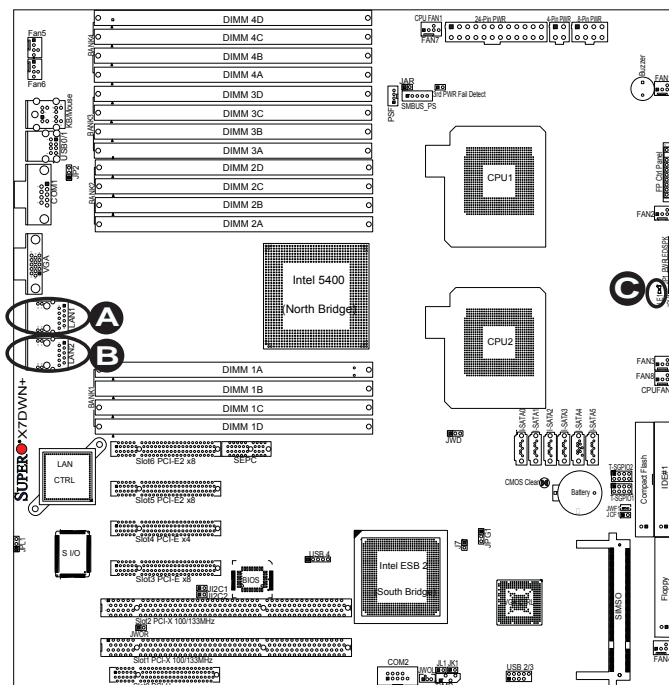
| LED Color | Definition |
|-----------|--------------------------|
| Off | No Connection or 10 Mbps |
| Green | 100 Mbps |
| Amber | 1 Gbps |

Onboard Power LED

An Onboard Power LED is located at LE1 on the motherboard. When this LED is lit, the system is on. Be sure to turn off the system and unplug the power cord before removing or installing components. See the tables at right for more information.

Onboard PWR LED Indicator (LE1) LED Settings

| LED Color | Definition |
|-------------------------|--------------------------------------|
| Off | System Off (PWR cable not connected) |
| Green | System On |
| Green: Flashing Quickly | ACPI S1 State |
| Green: Flashing Slowly | ACPI S3 (STR) State |



A. GLAN Port1 LEDs

B. GLAN Port2 LEDs

C. Onboard Power LED

2-8 Floppy Drive, SIMSO, Serial ATA and Hard Disk Drive Connections

Note the following when connecting the floppy and hard disk drive cables:

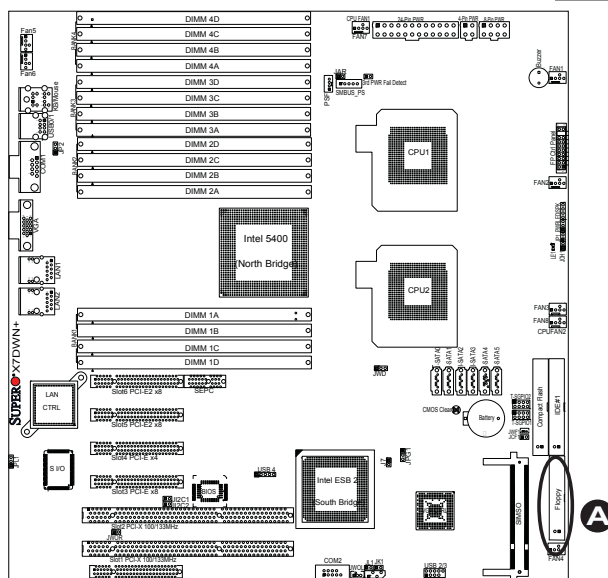
- The floppy disk drive cable has seven twisted wires.
- A red mark on a wire typically designates the location of pin 1.
- A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

Floppy Connector

The floppy connector is located at J22 on the motherboard. See the table on the right for pin definitions.

| Floppy Drive Connector Pin Definitions | | | |
|---|------------|-------|----------------|
| Pin# | Definition | Pin # | Definition |
| 1 | Ground | 2 | FDHDIN |
| 3 | Ground | 4 | Reserved |
| 5 | Key | 6 | FDEDIN |
| 7 | Ground | 8 | Index |
| 9 | Ground | 10 | Motor Enable |
| 11 | Ground | 12 | Drive Select B |
| 13 | Ground | 14 | Drive Select B |
| 15 | Ground | 16 | Motor Enable |
| 17 | Ground | 18 | DIR |
| 19 | Ground | 20 | STEP |
| 21 | Ground | 22 | Write Data |
| 23 | Ground | 24 | Write Gate |
| 25 | Ground | 26 | Track 00 |
| 27 | Ground | 28 | Write Protect |
| 29 | Ground | 30 | Read Data |
| 31 | Ground | 32 | Side 1 Select |
| 33 | Ground | 34 | Diskette |

A. Floppy



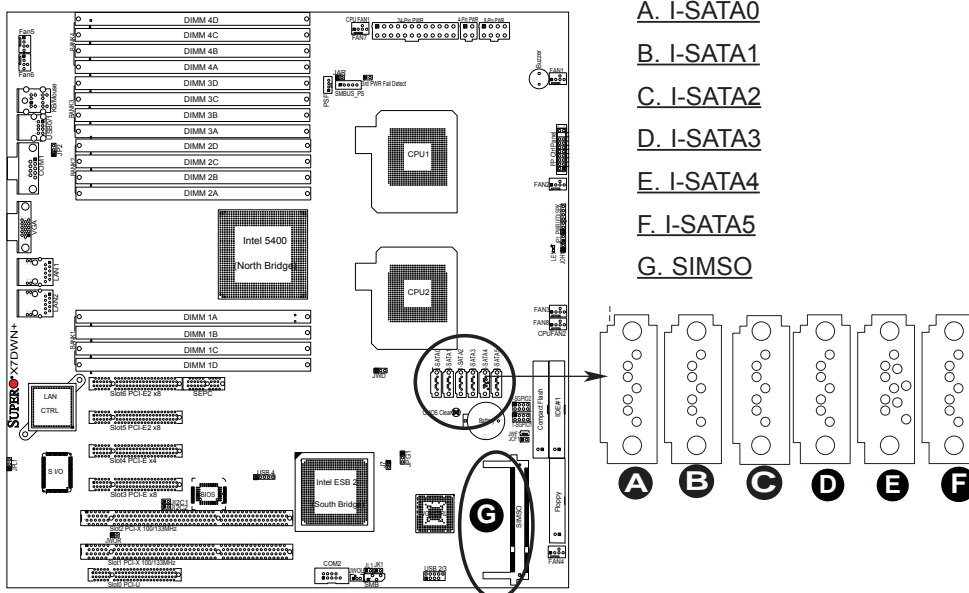
Serial ATA Ports

Six Serial ATA Ports (I-SATA0~I-SATA 5) are located at JS1~JS6 on the motherboard. These ports provide serial-link signal transmission, which is faster than that of the traditional Parallel ATA. See the table on the right for pin definitions.

| Serial ATA Pin Definitions | |
|-------------------------------|------------|
| Pin# | Definition |
| 1 | Ground |
| 2 | TX_P |
| 3 | TX_N |
| 4 | Ground |
| 5 | RX_N |
| 6 | RX_P |
| 7 | Ground |

SIMSO Slot

The SIMSO (Supermicro Intelligent Management) Slot is located at J16 on the motherboard. Refer to the layout below for the SIMSO Slot location.



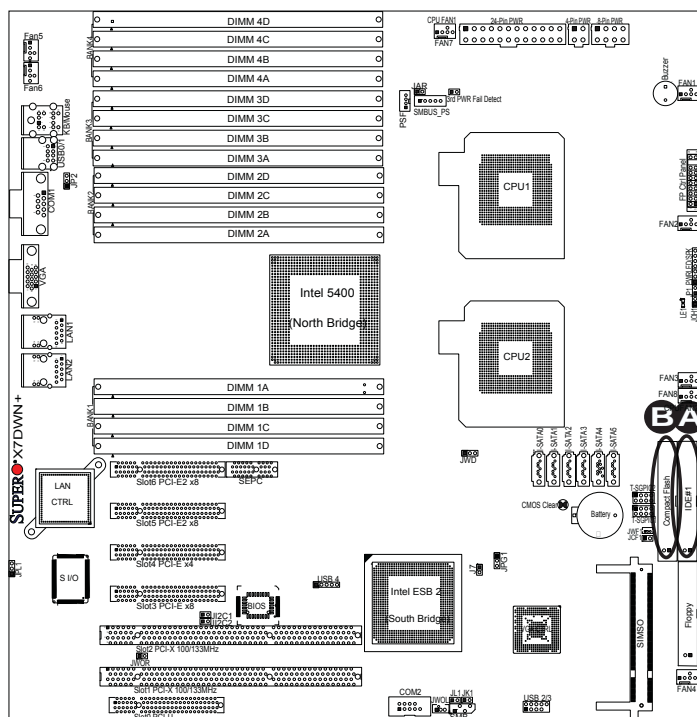
IDE Connectors

There are two IDE Connectors (JIDE1: Blue, JIDE2: White) on the motherboard. The blue IDE connector (JIDE1) is designated the Primary IDE Drive. The white IDE connector (JIDE2) is designated the Secondary IDE Drive, specially reserved for Compact Flash Card use only. (See the note below.) See the table on the right for pin definitions.

Note: JIDE2 (the white slot) is reserved for Compact Flash Card use only. Do not use it for other devices. If JIDE2 is populated with a Compact Flash Card, JIDE1 (the blue slot) will be available for one device only. For the Compact Flash Card to work properly, you will need to connect a power cable to JWF1 first.

IDE Drive Connectors
Pin Definitions

| Pin# | Definition | Pin # | Definition |
|------|---------------|-------|---------------|
| 1 | Reset IDE | 2 | Ground |
| 3 | Host Data 7 | 4 | Host Data 8 |
| 5 | Host Data 6 | 6 | Host Data 9 |
| 7 | Host Data 5 | 8 | Host Data 10 |
| 9 | Host Data 4 | 10 | Host Data 11 |
| 11 | Host Data 3 | 12 | Host Data 12 |
| 13 | Host Data 2 | 14 | Host Data 13 |
| 15 | Host Data 1 | 16 | Host Data 14 |
| 17 | Host Data 0 | 18 | Host Data 15 |
| 19 | Ground | 20 | Key |
| 21 | DRQ3 | 22 | Ground |
| 23 | I/O Write | 24 | Ground |
| 25 | I/O Read | 26 | Ground |
| 27 | IOCHRDY | 28 | BALE |
| 29 | DACK3 | 30 | Ground |
| 31 | IRQ14 | 32 | IOCS16 |
| 33 | Addr1 | 34 | Ground |
| 35 | Addr0 | 36 | Addr2 |
| 37 | Chip Select 0 | 38 | Chip Select 1 |
| 39 | Activity | 40 | Ground |



A. IDE#1

B. IDE#2 (Compact Flash)

Chapter 3

Troubleshooting

3-1 Troubleshooting Procedures

Use the following procedures to troubleshoot your system. If you have followed all of the procedures below and still need assistance, refer to the 'Technical Support Procedures' and/or 'Returning Merchandise for Service' section(s) in this chapter.

Note: Always disconnect the power cord before adding, changing or installing any hardware components.

Before Power On

1. Make sure that there are no short circuits between the motherboard and chassis.
2. Disconnect all ribbon/wire cables from the motherboard, including those for the keyboard and mouse.
3. Remove all add-on cards.
4. Install one CPU (making sure it is fully seated) and connect the chassis speaker and the power LED to the motherboard. (Check all jumper settings as well.)
5. Use the correct type of CMOS onboard battery as recommended by the Manufacturer. Do not install the onboard battery upside down to avoid possible explosion.

No Power

1. Make sure that no short circuits between the motherboard and the chassis.
2. Make sure that all jumpers are set to their default positions.
3. Check that the 115V/230V switch on the power supply is properly set.
4. Turn the power switch on and off to test the system.
5. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.

No Video

1. If the power is on but you have no video, remove all the add-on cards and cables.
2. Use the speaker to determine if any beep codes exist. Refer to the Appendix

for details on beep codes.

Losing the System's Setup Configuration

1. Make sure that you are using a high quality power supply. A poor quality power supply may cause the system to lose the CMOS setup information. Refer to Section 1-6 for details on recommended power supplies.
2. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.
3. If the above steps do not fix the Setup Configuration problem, contact your vendor for repairs.

NOTE

If you are a system integrator, VAR or OEM, a POST diagnostics card is recommended. For I/O port 80h codes, refer to App. B.

Memory Errors

1. Make sure that the DIMM modules are properly and fully installed.
2. Check if different speeds of DIMMs have been installed and check if the BIOS setup is configured for the fastest speed of RAM used. (It is recommended to use the same RAM speed for all DIMMs in the system.)
3. Make sure you are using the correct type of DDR2 FBD (Fully Buffered) ECC 800/667/533 SDRAM (recommended by the manufacturer.)
4. Check for bad DIMM modules or slots by swapping a single module between all memory slots and check the results.
5. Make sure that all memory modules are fully seated in their slots. As an interleaved memory scheme is used, you must install pair(s) modules at a time, beginning with Bank 1, then Bank 2, and so on (see Page 2-6).
6. Check the position of the 115V/230V switch on the power supply.

3-2 Technical Support Procedures

Before contacting Technical Support, please take the following steps. Also, please note that as a motherboard manufacturer, Supermicro does not sell directly to end-users, so it is best to first check with your distributor or reseller for troubleshooting services. They should know of any possible problem(s) with the specific system configuration that was sold to you.

1. Please go through the 'Troubleshooting Procedures' and 'Frequently Asked Question' (FAQ) sections in this chapter or see the FAQs on our web site

(<http://www.supermicro.com/support/faqs/>) before contacting Technical Support.

2. BIOS upgrades can be downloaded from our web site at (<http://www.supermicro.com/support/bios/>).

Note: *Not all BIOS can be flashed, it depends on the modifications to the boot block code.*

3. If you still cannot resolve the problem, include the following information when contacting Supermicro for technical support:

- Motherboard model and PCB revision number
- BIOS release date/version (this can be seen on the initial display when your system first boots up)
- System configuration

An example of a Technical Support form is on our web site at (<http://www.supermicro.com/support/contact.cfm>).

4. Distributors: For immediate assistance, please have your account number ready when placing a call to our technical support department. We can be reached by e-mail at support@supermicro.com or by fax at: (408) 503-8000, option 2.

3-3 Frequently Asked Questions

Question: What are the various types of memory that my motherboard can support?

Answer: The X7DWN+ has 16 240-pin DIMM slots that support DDR2 FBD ECC 800/667/533 SDRAM modules. It is strongly recommended that you do not mix memory modules of different speeds and sizes.

Question: How do I update my BIOS?

Answer: It is recommended that you **do not** upgrade your BIOS if you are not experiencing any problems with your system. Updated BIOS files are located on our web site at <http://www.supermicro.com/support/bios/>. Please check our BIOS warning message and the information on how to update your BIOS on our web site. Select your motherboard model and download the BIOS file to your computer. Also, check the current BIOS revision and make sure that it is newer than your BIOS before downloading. You can choose from the zip file and the .exe file. If you choose the zip BIOS file, please unzip the BIOS file onto a bootable device or a USB pen. Run the batch file using the format flash.bat filename.rom from your bootable device or USB pen to flash the BIOS. Then, your system will automatically reboot. If you choose the .exe file, please run the .exe file under Windows to

create the BIOS flash floppy disk. Insert the floppy disk into the system you wish to flash the BIOS. Then, bootup the system to the floppy disk. The BIOS utility will automatically flash the BIOS without any prompts. Please note that this process may take a few minutes to complete. Do not be concerned if the screen is paused for a few minutes.



Warning: Do not shut down or reset the system while updating the BIOS to prevent possible system boot failure!)

Question: What's on the CD that came with my motherboard?

Answer: The supplied compact disc has quite a few drivers and programs that will greatly enhance your system. We recommend that you review the CD and install the applications you need. Applications on the CD include chipset drivers for the Windows OS, security and audio drivers.

3-4 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alternation, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

Chapter 4

BIOS

4-1 Introduction

This chapter describes the Phoenix BIOS™ Setup utility for the X7DWN+. The Phoenix ROM BIOS is stored in a flash chip and can be easily upgraded using a floppy disk-based program.

Note: Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Please refer to the Manual Download area of the Supermicro web site <<http://www.supermicro.com>> for any changes to the BIOS that may not be reflected in this manual.

System BIOS

The BIOS is the Basic Input Output System used in all IBM® PC, XT™, AT®, and PS/2® compatible computers. The Phoenix BIOS stores the system parameters, types of disk drives, video displays, etc. in the CMOS. The CMOS memory requires very little electrical power. When the computer is turned off, a backup battery provides power to the CMOS Logic, enabling it to retain system parameters. When the computer is powered on, the computer is configured with the values stored in the CMOS Logic by the system BIOS, which gains control at boot up.

How To Change the Configuration Data

The CMOS information that determines the system parameters may be changed by entering the BIOS Setup utility. This Setup utility can be accessed by pressing the <Delete> key at the appropriate time during system boot.

Starting the Setup Utility

Normally, the only visible POST (Power On Self Test) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the BIOS Setup utility. From the main menu, you can access the other setup screens, such as the Security and Power menus. Beginning with Section 4-3, detailed descriptions are given for each parameter setting in the Setup utility.



Warning: Do not shut down or reset the system while updating BIOS to prevent possible boot failure.

4-2 Running Setup

Default settings are in bold text unless otherwise noted.

The BIOS setup options described in this section are selected by choosing the appropriate text from the main BIOS Setup screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options as shown on the following page.

When you first power on the computer, the Phoenix BIOS™ is immediately activated.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Delete> immediately after turning the system on, or
2. When the message shown below appears briefly at the bottom of the screen during the POST (Power On Self-Test), press the <Delete> key to activate the main Setup menu:

Press the <Delete> key to enter Setup

4-3 Main BIOS Setup

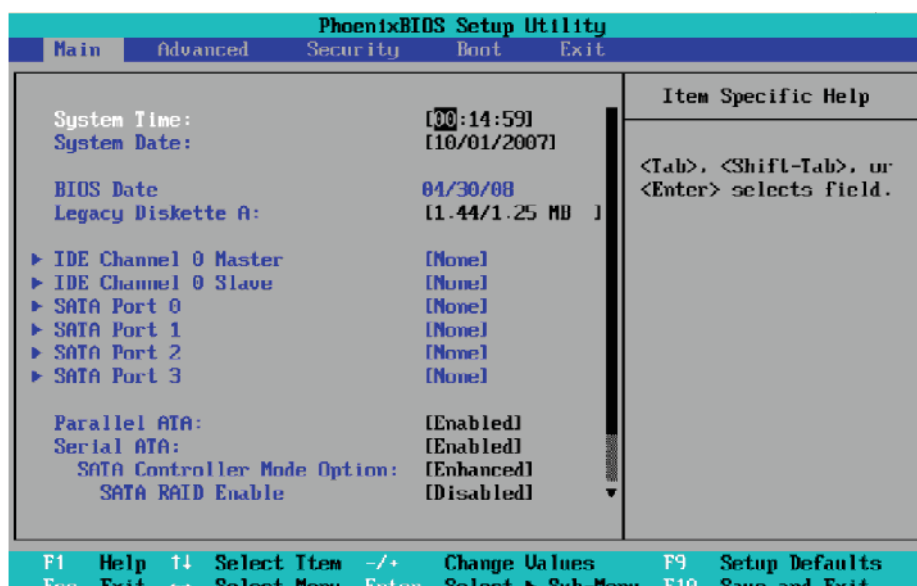
All main Setup options are described in this section. The main BIOS Setup screen is displayed below.

Use the Up/Down arrow keys to move among the different settings in each menu. Use the Left/Right arrow keys to change the options for each setting.

Press the <Esc> key to exit the CMOS Setup Menu. The next section describes in detail how to navigate through the menus.

Items that use submenus are indicated with the ► icon. With the item highlighted, press the <Enter> key to access the submenu.

Main BIOS Setup Menu



Main Setup Features

System Time

To set the system date and time, key in the correct information in the appropriate fields. Then press the <Enter> key to save the data.

System Date

Using the arrow keys, highlight the month, day and year fields, and enter the correct data. Press the <Enter> key to save the data.

BIOS Date

This field displays the date when this version of BIOS was built.

Legacy Diskette A

This setting allows the user to set the type of floppy disk drive installed as diskette A. The options are Disabled, 360Kb 5.25 in, 1.2MB 5.25 in, 720Kb 3.5 in, **1.44/1.25MB**, 3.5 in and 2.88MB 3.5 in.

►IDE Channel 0 Master/Slave, SATA Port 0, SATA Port 1, SATA Port 2 and SATA Port 3

These settings allow the user to set the parameters of IDE Channel 0 Master/Slave, SATA Port 0, SATA Port 1, SATA Port 2, SATA Port 3 slots. Hit <Enter> to activate the following sub-menu screen for detailed options of these items. Set the correct configurations accordingly. The items included in the sub-menu are:

Type

This option allows the user to select the type of IDE hard drive. Select **Auto** to allow the BIOS to automatically configure the parameters of the HDD installed at the connection. Enter a number between 1 to 39 to select a predetermined HDD type. Select User to allow the user to enter the parameters of the HDD installed. Select CDROM if a CDROM drive is installed. Select ATAPI if a removable disk drive is installed.

Multi-Sector Transfers

This item allows the user to specify the number of sectors per block to be used in multi-sector transfer. The options are **Disabled**, 4 Sectors, 8 Sectors, and 16 Sectors.

LBA Mode Control

This item determines whether the Phoenix BIOS will access the IDE Channel 0 Master Device via the LBA mode. The options are Enabled and **Disabled**.

32 Bit I/O

This option allows the user to enable or disable the function of 32-bit data transfer. The options are Enabled and **Disabled**.

Transfer Mode

This option allows the user to set the transfer mode. The options are **Standard**, Fast PIO1, Fast PIO2, Fast PIO3, Fast PIO4, FPIO3/DMA1 and FPIO4/DMA2.

Ultra DMA Mode

This option allows the user to select Ultra DMA Mode. The options are **Disabled**, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4, and Mode 5.

Parallel ATA

This setting allows the user to enable or disable the function of Parallel ATA. The options are Disabled, **Channel 0**, Channel 1, and Both.

Serial ATA

This setting allows the user to enable or disable the function of Serial ATA. The options are Disabled and **Enabled**.

SATA Controller Mode Option

Select Compatible to allow the SATA and PATA drives to be automatically-detected and be placed in the Legacy Mode by the BIOS. Select **Enhanced** to allow the SATA and PATA drives to be to be automatically-detected and be placed in the Native IDE Mode. (**Note:** The Enhanced mode is supported by the Windows 2000 OS or a later version.)

When the SATA Controller Mode is set to "**Enhanced**", the following items will display:

Serial ATA (SATA) RAID Enable

Select Enable to enable Serial ATA RAID Functions. (For the Windows OS environment, use the RAID driver if this feature is set to Enabled. When this item is set to Enabled, the item: "ICH RAID Code Base" will be available for you to select either Intel or Adaptec Host RAID firmware to be activated. If this item is set to **Disabled**, the item-SATA AHCI Enable will be available.) The options are Enabled and **Disabled**.

ICH RAID Code Base

Select Intel to enable Intel's SATA RAID firmware. Select Adaptec to use Adaptec's HostRAID firmware. The options are **Intel** and Adaptec.

SATA AHCI Enable

Select Enable to enable the function of Serial ATA Advanced Host Interface. (Take caution when using this function. This feature is for advanced programmers only. The options are Enabled and **Disabled**.)

System Memory

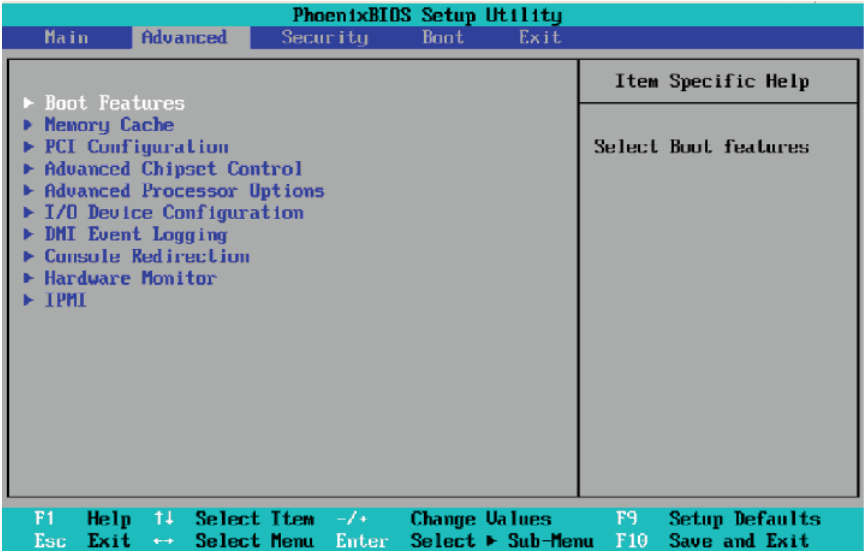
This display informs you how much system memory is recognized as being present in the system.

Extended Memory

This display informs you how much extended memory is recognized as being present in the system.

4-4 Advanced Setup

Choose Advanced from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. The items with a triangle beside them have sub menus that can be accessed by highlighting the item and pressing <Enter>.



▶ Boot Features

Access the submenu to make changes to the following settings.

QuickBoot Mode

If enabled, this feature will speed up the POST (Power On Self Test) routine by skipping certain tests after the computer is turned on. The settings are **Enabled** and Disabled. If Disabled, the POST routine will run at normal speed.

QuietBoot Mode

This setting allows you to **Enable** or Disable the graphic logo screen during boot-up.

POST Errors

Select Enable to stop the POST routine and allow the system to display error messages when an error occurs during startup. The options are **Enabled** and Disabled.

ACPI Mode

Use the setting to determine if you want to employ ACPI (Advanced Configuration and Power Interface) power management on your system. The options are **Yes** and No.

Power Button Behavior

If set to **Instant-Off**, the system will power off immediately as soon as the user hits the power button. If set to 4-sec., the system will power off when the user presses the power button for 4 seconds or longer. The options are **instant-off** and 4-sec override.

Resume On Modem Ring

Select On to “wake your system up” when an incoming call is received by your modem. The options are On and **Off**.

EFI OS Boot

If enabled, this feature provides support for EFI OS booting. The options are Enabled and **Disabled**.

OS Booting

Set this feature to Enabled to allow the OS to boot up the system. The options are Enabled and **Disabled**.

Power Loss Control

This setting allows you to choose how the system will react when power returns after an unexpected loss of power. The options are Stay Off, Power On, and **Last State**.

Watch Dog

If enabled, this option will automatically reset the system if the system is not active for more than a predefined time period. The options are Enabled and **Disabled**.

Summary Screen

This setting allows you to **Enable** or Disable the summary screen which displays the system configuration during bootup.

►Memory Cache

Cache System BIOS Area

This setting allows you to designate a reserve area in the system memory to be used as a System BIOS buffer to allow the BIOS to write (cache) its data into this reserved memory area. Select **Write Protect** to enable the function and reserve this area for the Video BIOS ROM access only. Select **Uncached** to disable this function and make this area available for other devices.

Cache Video BIOS Area

This setting allows you to designate a reserve area in the system memory to be used as a Video BIOS buffer to allow the BIOS to write (cache) its data into this reserved memory area. Select **Write Protect** to enable the function and reserve this area for the Video BIOS ROM access only. Select **Uncached** to disable this function and make this area available for other devices.

Cache Base 0-512K

If enabled, this feature will allow the data stored in the base memory area: block 0-512K to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or to be written into L1, L2 cache inside the CPU to speed up CPU operations. Select **Uncached** to disable this function. Select **Write Through** to allow data to be cached into the buffer and written into the system memory at the same time. Select **Write Protect** to prevent data from being written into the base memory area of Block 0-512K. Select **Write Back** to allow the CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are **Uncached**, **Write Through**, **Write Protect**, and **Write Back**.

Cache Base 512K-640K

If enabled, this feature will allow the data stored in the memory area: 512K-640K to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or written into L1, L2 or L3 cache inside the CPU to speed up CPU operations. Select **Uncached** to disable this function. Select **Write Through** to allow data to be cached into the buffer and written into the system memory at the same time. Select **Write Protect** to prevent data from being written into the base memory area of Block 512-640K. Select **Write Back** to allow the CPU to write data back directly from the buffer without writing data to the system memory to speed up CPU's operation. The options are **Uncached**, **Write Through**, **Write Protect**, and **Write Back**.

Cache Extended Memory

If enabled, this feature will allow the data stored in the extended memory area to

be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or written into L1, L2, L3 cache inside the CPU to speed up CPU operations. Select **Uncached** to disable this function. Select **Write Through** to allow data to be cached into the buffer and written into the system memory at the same time. Select **Write Protect** to prevent data from being written into the extended memory area above 1 MB. Select **Write Back** to allow the CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are **Uncached**, **Write Through**, **Write Protect**, and **Write Back**.

Discrete MTRR Allocation

If enabled, MTRRs (-Memory Type Range Registers) are configured as distinct, separate units and cannot be overlapped. If enabled, the user can achieve better graphic effects when using a Linux graphic driver that requires the write-combining configuration with 4GB or more memory. The options are **Enabled** and **Disabled**.

►PCI Configuration

Access the submenu to make changes to the following settings for PCI devices.

Onboard GLAN1/Onboard GLAN2 (Gigabit- LAN) OPROM Configure

Select **Enabled** to allow the system to boot from the GLAN1 connection or the GLAN 2 connection. The options are **Enabled** and **Disabled**.

IPMI 3rd-LAN OPROM Configure

Select **Enabled** to allow the system to boot from the IPMI 3rd-LAN connection. The options are **Disabled** and **Enabled**.

Onboard Storage OPROM Configure

Select **Enabled** to allow the system to boot from the onboard storage device. The options are **Disabled** and **Enabled**.

Option ROM Replacement

Select **Enabled** to enable to use the feature of Option ROM Chip Replacement. If the system hangs due to this feature, reboot the system and change the setting. The options are **Enabled** and **Disabled**.

ROM Scan Ordering

This feature allows the user to decide which Option ROM to be activated first. The options are **Onboard first** and **Add-On first**.

PCI Parity Error Forwarding

Enable this item to forward the PCI errors occurring behind P2P bridges to the South Bridge, so NMI can be asserted. The options are Enabled and **Disabled**.

PCI Fast Delayed Transaction

Enable this function to improve the DMA data transfer rate for a PCI 32-bit multimedia card. The options are Enable and **Disabled**.

Reset Configuration Data

If set to Yes, this setting clears the Extended System Configuration Data- (ESCD) area. The options are Yes and **No**.

Frequency for PCI-X#1~PCI-X#2

This option allows the user to change the bus frequency for the devices installed in the slot indicated. The options are **Auto**, PCI 33 MHz, PCI 66 MHz, PCI-X 66 MHz, PCI-X 100 MHz, and PCI-X 133 MHz.

►Slot0 PCI-U x8, Slot1 PCI-X 133 MHz, Slot2 PCI-X 133MHz, Slot3 PCI-Exp x8, Slot4 PCI-Exp x4, Slot5 PCI-Exp x8, and Slot6 PCI-Exp x8

Access the submenu for each of the settings above to make changes to the following:

Option ROM Scan

When enabled, this setting will initialize the device expansion ROM. The options are **Enabled** and Disabled.

Enable Master

This setting allows you to enable the selected device as the PCI bus master. The options are **Enabled** and Disabled.

Latency Timer

This setting allows you to set the clock rate for Bus Master. A high-priority, high-throughput device may benefit from a greater clock rate. The options are **Default**, 0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h, and 00E0h. For Unix, Novell and other Operating Systems, please select the option: other. If a drive fails after the installation of a new software, you might want to change this setting and try again. A different OS requires a different Bus Master clock rate.

Large Disk Access Mode

This setting determines how large hard drives are to be accessed. The options are

DOS or Other (for Unix, Novelle NetWare and other operating systems).

► **Advanced Chipset Control**

Access the submenu to make changes to the following settings.



Warning: Take caution when changing the Advanced settings. An Incorrect value, a very high DRAM frequency or an incorrect DRAM timing may cause system to become unstable. When this occurs, reset the setting to the default setting.

SERR Signal Condition

This setting specifies the ECC Error conditions that an SERR# is to be asserted. The options are None, **Single Bit**, Multiple Bit, and Both.

Clock Spectrum Feature

If Enabled, the BIOS will monitor the level of Electromagnetic Interference caused by the components and will attempt to decrease the interference whenever needed. The options are Enabled and **Disabled**.

► **Intel VT for Direct I/O (VT-d)**

Select Enable to enable the functionality of the Intel Virtualization Technology for Direct I/O VT-d support by reporting the I/O device assignment to VMM through the DMAR ACPI Tables. This feature offers fully-protected I/O resource-sharing across the Intel platforms, providing the user with greater reliability, security and availability in networking and data-sharing. The settings are Enabled and **Disabled**. Press the <Enter> key to enter the submenu. The following items will appear:

VT-d for Port 0 (ESI)

VT-d for Port 1

VT-d for Port 3

VT-d for Port 5

VT-d for Port 7

VT-d for Port 9

Select Enable to enable Intel VT-d support for Port 0(ESI), Port 3, Port 5, Port 7, Port 9 through using DRHD structures located in the ACPI Tables.

4GB PCI Hole Granularity

This feature allows you to select the granularity of PCI hole for PCI slots. If MTRRs are not enough, this option may be used to reduce MTRR occupation. The options are: **256 MB**, 512 MB, 1GB and 2GB.

Memory Voltage

Select Auto to allow the BIOS to automatically detect memory voltage based on the SPD table. Select 1.5V to force the system to use 1.5V for lower power fully-buffered DIMM modules. Select 1.8V to use 1.8V power for onboard memory modules. Note: Using 1.8V might cause damage to the memory modules that only support 1.5V power. The options are: **Auto**, 1.5V and 1.8V.

Memory Branch Mode

This option determines how the two memory branches operate. System address space can either be interleaved between the two branches or Sequential from one branch to another. Mirror mode allows data correction by maintaining two copies of data in two branches. Single Channel 0 allows a single DIMM population during system manufacturing. The options are **Interleave**, Sequential, Mirroring, and Single Channel 0.

Branch 0 Rank Sparing/Branch 1 Rank Sparing

Select **Enable** to enable the function of memory sparing for Memory Bus Branch 0 or Branch 1. The options are Enabled and **Disabled**.

Branch 0 Rank Interleaving/Branch 1 Rank Interleaving

Select enable to enable Interleaved Memory for Memory Bus Branch 0 Rank or Branch 1 Rank. The options for Memory Interleaving are 1:1, 2:1 and **4:1**.

Enhanced x8 Detection

Select **Enabled** to enable Enhanced x8 DRAM UC Error Detection. The options are Disabled and **Enabled**.

Demand Scrub

Scrubbing is a process that allows the North Bridge to correct correctable memory errors found on an FBD memory module. When the CPU or I/O issues a demand-read command, and the read data from memory turns out to be a correctable ECC, it is corrected and sent to the original source. Memory is updated as well. Select Enabled to use Demand Scrubbing for ECC memory correction. The options are **Enabled** and Disabled.

High Temperature DRAM Operation

When set to Enabled, the BIOS will refer to the SPD table to set the maximum DRAM temperature. If disabled, the BIOS will set the maximum DRAM temperature based on a predefined value. The options are Enabled and **Disabled**.

AMB Thermal Sensor

Select Enabled to enable the thermal sensor embedded in the Advanced Memory Buffer on a fully buffered memory module for thermal monitoring. The options are **Disabled** and Enabled.

Thermal Throttle

Select Enabled to enable closed-loop thermal throttling on a fully buffered (FBD) memory module. In the closed-loop thermal environment, thermal throttling will be activated when the temperature of the FBD DIMM module exceeds a predefined threshold. The options are Enabled and **Disabled**.

Global Activation Throttle

Select Enabled to enable the function of open-loop global thermal throttling on the fully buffered (FBD) memory modules and allow global thermal throttling to become active when the number of activate control exceeds a predefined number. The options are Enabled and **Disabled**.

Force ITK Configuration Clocking

Select Enabled to configure FBD clock settings to support ITK testing. The options are **Disabled** and Enabled.

Reserved Branch for ITK Test

This feature allows the user to specify the memory branch number to be reserved for ITK testing. The default setting is **Branch 1**.

Snoop Filter

Select Enabled to eliminate snoop traffic to the graphics port to greatly improve system performance when running graphics intensive applications. The options are **Enabled** and Disabled.

Crystal Beach Features

Select **Enabled** to use the Intel I/O AT (Acceleration Technology) to accelerate the performance of TOE devices. (Note: A TOE device is a specialized, dedicated processor that is installed on an add-on card or a network card to handle some or all packet processing of this add-on card. For this motherboard, the TOE device is built inside the ESB 2 South Bridge chip.) The options are **Enabled** and Disabled.

Route Port 80h Cycles to

This feature allows the user to decide which bus to send debug information to. The options are Disabled, PCI and **LPC**.

High Precision Event Time

Select Yes to activate the High Precision Event Timer (HPET), which is capable of producing periodic interrupts at a much higher frequency than a Real-time Clock (RTC) can in synchronizing multimedia streams, providing smooth playback and reducing the dependency on other timestamp calculation devices, such as an x86 RDTSC Instruction embedded in a CPU. The High Precision Event Timer is used to replace the 8254 Programmable Interval Timer. The options for this feature are Yes and **No**.

USB Function

Select Enabled to enable the function of USB devices specified. The settings are **Enabled** and Disabled.

Legacy USB Support

This setting allows you to enable support for Legacy USB devices. The settings are **Enabled** and Disabled.

► Advanced Processor Options

Access the submenu to make changes to the following settings.

CPU Speed

This is a display that indicates the speed of the installed processor.

Frequency Ratio (Available when supported by the CPU.)

The feature allows the user to set the internal frequency multiplier for the CPU. The options are: **Default**, x12, x13, x14, x15, x16, x17 and x18.

Core-Multi-Processing (Available when supported by the CPU.)

Set to Enabled to use a processor's Second Core and beyond. (Please refer to Intel's web site for more information.) The options are Disabled and **Enabled**.

Machine Checking (Available when supported by the CPU.)

Set to Enabled to activate the function of Machine Checking and allow the CPU to detect and report hardware (machine) errors via a set of model-specific registers (MSRs). The options are Enabled and **Disabled**.

Fast String Operations (Available if supported by the CPU.)

Set to **Enabled** to enable the fast string operations for special CPU instructions. The options are Disabled and **Enabled**.

C1/C2 Enhanced Mode (Available when supported by the CPU.)

Set to Enabled to enable Enhanced Halt State to lower CPU voltage/frequency to prevent overheat. The options are Enabled and **Disabled**. (**Note:** please refer to Intel's web site for detailed information.)

Execute Disable Bit (Available when supported by the CPU and the OS.)

Set to Enabled to enable Execute Disable Bit and allow the processor to classify areas in memory where an application code can execute and where it cannot, and thus preventing a worm or a virus from inserting and creating a flood of codes to overwhelm the processor or damage the system during an attack. **Note:** this feature is available when your OS and your CPU support the function of Execute Disable Bit. The options are **Disabled** and Enabled. For more information, please refer to Intel's and Microsoft's web sites.

Adjacent Cache Line Prefetch (Available when supported by the CPU.)

The CPU fetches the cache line for 64 bytes if this option is set to Disabled. The CPU fetches both cache lines for 128 bytes as comprised if Enabled. The options are **Disabled** and Enabled.

Hardware Prefetch (Available if supported by the CPU.)

Set to this option to **Enabled** to enable the hardware components that are used in conjunction with software programs to prefetch data in order to speed up data processing. The options are Disabled and **Enabled**.

Set Maximum Ext. CUID=3

When set to Enabled, the Maximum Extended CUID will be set to 3. The options are **Disabled** and Enabled.

Direct Cache Access (Available when supported by the CPU.)

Set to Enable to route inbound network IO traffic directly into processor caches to reduce memory latency and improve network performance. The options are **Disabled** and Enabled.

DCA Delay Clocks (Available when supported by the CPU.)

This feature allows the user to set the clock delay setting from snoop to prefetch for Direct Cache Access. Select a setting from 8 (bus cycles) to 120 (bus cycles) (in 8-cycle increment). The default setting is **32 (bus cycles)**.

Intel <R> Virtualization Technology (Available when supported by the CPU.)

Select Enabled to use the feature of Virtualization Technology to allow one platform to run multiple operating systems and applications in independent partitions, creating

multiple "virtual" systems in one physical computer. The options are Enabled and **Disabled**. (**Note:** If there is any change to this setting, you will need to power off and restart the system for the change to take effect.) Please refer to Intel's web site for detailed information.

Intel EIST Support (Available when supported by the CPU.)

Select Enabled to use the Enhanced Intel SpeedStep Technology and allows the system to automatically adjust processor voltage and core frequency in an effort to reduce power consumption and heat dissipation. The options are Enabled and **Disabled**. Please refer to Intel's web site for detailed information.

SMRR Support (Available when supported by the CPU.)

Select Enabled to use a new CPU security feature to prevent viruses accessing the System Management Module (SMM). When set to Enabled, the SM Memory Region will become uncacheable, effectively preventing viruses from modifying or corrupting critical system parameters. The options are Enabled and **Disabled**. Please refer to Intel's web site for detailed information.

► I/O Device Configuration

Access the submenu to make changes to the following settings.

KBC Clock Input

This setting allows you to select clock frequency for KBC. The options are 6MHz, 8MHz, **12MHz**, and 16MHz.

Serial Port A

This setting allows you to assign control of serial port A. The options are **Enabled** (user defined), Disabled, and Auto (BIOS- or OS- controlled).

Base I/O Address

This setting allows you to select the base I/O address for serial port A. The options are **3F8**, 2F8, 3E8, and 2E8.

Interrupt

This setting allows you to select the IRQ (interrupt request) for serial port A. The options are IRQ3 and **IRQ4**.

Serial Port B

This setting allows you to assign control of serial port B. The options are **Enabled** (user defined), Disabled, Auto (BIOS controlled) and OS Controlled.

Mode

This setting allows you to set the type of device that will be connected to serial port B. The options are **Normal** and IR (for an infrared device).

Base I/O Address

This setting allows you to select the base I/O address for serial port B. The options are 3F8, **2F8**, 3E8 and 2E8.

Interrupt

This setting allows you to select the IRQ (interrupt request) for serial port B. The options are **IRQ3** and IRQ4.

Parallel Port

This setting allows you to assign control of the parallel port. The options are **Enabled** (user defined), Disabled and Auto (BIOS-or OS- controlled).

Base I/O Address

Select the base I/O address for the parallel port. The options are **378**, 278 and 3BC.

Interrupt

This setting allows you to select the IRQ (interrupt request) for the parallel port. The options are IRQ5 and **IRQ7**.

Mode

This feature allows you to specify the parallel port mode. The options are Output only, Bi-Directional, EPP and **ECP**.

DMA Channel

This item allows you to specify the DMA channel for the parallel port. The options are DMA1 and **DMA3**.

Floppy Disk Controller

This setting allows you to assign control of the floppy disk controller. The options are **Enabled** (user defined), Disabled, and Auto (BIOS and OS controlled).

Base I/O Address

This setting allows you to select the base I/O address for the Floppy port. The options are **Primary** and Secondary.

► DMI Event Logging

Access the submenu to make changes to the following settings.

Event Log Validity

This is a display to inform you of the event log validity. It is not a setting.

Event Log Capacity

This is a display to inform you of the event log capacity. It is not a setting.

View DMI Event Log

Highlight this item and press <Enter> to view the contents of the event log.

Event Logging

This setting allows you to **Enable** or Disable event logging.

ECC Event Logging

This setting allows you to **Enable** or Disable ECC event logging.

Mark DMI Events as Read

Highlight this item and press <Enter> to mark the DMI events as read.

Clear All DMI Event Logs

Select Yes and press <Enter> to clear all DMI event logs. The options are Yes and **No**.

► Console Redirection

Access the submenu to make changes to the following settings.

COM Port Address

This item allows you to specify which COM port to direct the remote console to: Onboard COM A or Onboard COM B. This setting can also be **Disabled**.

BAUD Rate

This item allows you to set the BAUD rate for console redirection. The options are 300, 1200, 2400, 9600, **19.2K**, 38.4K, 57.6K, and 115.2K.

Console Type

This item allows you to set console redirection type. The options are VT100, VT100/8bit, PC-ANSI/7bit, **PC ANSI**, VT100+, VT-UTF8 and ASCII.

Flow Control

This item allows you to select the flow control option for the console. The options are: None, XON/XOFF, and **CTS/RTS**.

Console Connection

This item allows you to decide how console redirection is to be connected: either **Direct** or Via Modem.

Continue CR after POST

Select on to continue with console redirection after the POST routine. The options are On and **Off**.

► Hardware Monitor Logic

Highlight this and hit <Enter> to see the status for the following items:

CPU1 Temperature/CPU2 Temperature/System Temperature

Fan1-Fan8 Speeds:

If the feature of Auto Fan Control is enabled, the BIOS will automatically display the status of the fans indicated in this item.

Fan Speed Control Modes

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase, and vice versa. Select Workstation if your system is used as a Workstation. Select Server if your system is used as a Server. Select 3-pin if your chassis uses 3-pin fans. Select 4-pin if your chassis uses 4-pin fans. Select "Disable" to disable the fan speed control function and allow the onboard fans to constantly run at the full speed (12V). The Options are: **1. Running at the Full Speed**, 2. Optimized Server w/3-pin, 3. Optimized Workstation w/3-pin, 4. Optimized Server w/4-pin, and 5. Optimized Workstation w/4-pin.

Voltage Monitoring

The following items will be monitored and displayed:

VcoreA/VcoreB

+12V/-12V

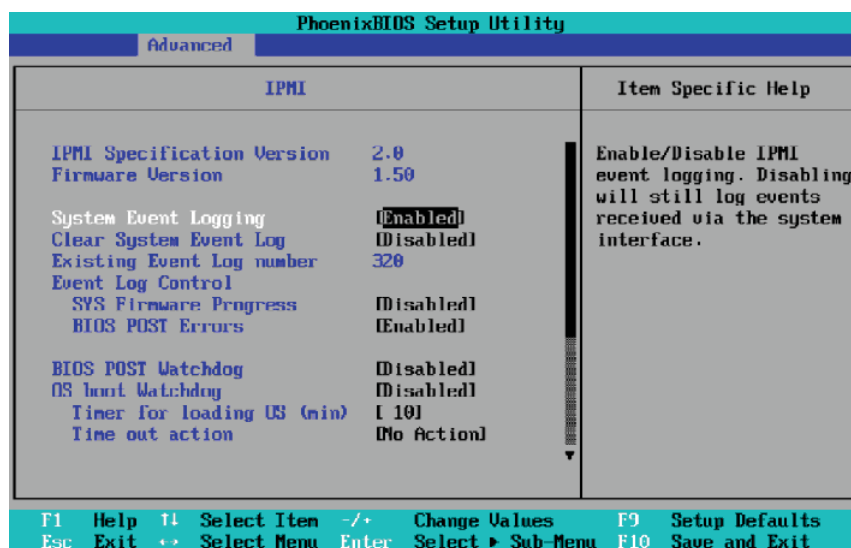
+5Vsb/+5VDD

+3.3V

P1V5/P_VTT/Vbat

Note: In the Windows OS environment, the Supero Doctor III settings take precedence over the BIOS settings. When first installed, Supero Doctor III adopts the temperature threshold settings previously set in the BIOS. Any subsequent changes to these thresholds must be made within Supero Doctor, since the SD III settings override the BIOS settings. For the Windows OS to adopt the BIOS temperature threshold settings, please change the SDIII settings to be the same as those set in the BIOS.

► **IPMI** (The option is available only when an IPMI card is installed in the system.)



IPMI Specification Version: This item displays the current IPMI Version.

Firmware Version: This item displays the current Firmware Version.

System Event Logging

Select Enabled to enable IPMI Event Logging. When this function is set to Disabled, the system will continue to log events received via system interface. The options are **Enabled** and Disabled.

Clear System Event Logging

Enabling this function to force the BIOS to clear the system event logs during the next cold boot. The options are Enabled and **Disabled**.

Existing Event Log Number

This item displays the number of the existing event log.

Event Log Control

System Firmware Progress

Enabling this function to log POST progress. The options are Enabled and **Disabled**.

BIOS POST Errors

Enabling this function to log POST errors. The options are Enabled and **Disabled**.

BIOS POST Watch Dog

Set to Enabled to enable POST Watch Dog. The options are Enabled and **Dis-abled**.

OS Boot Watch Dog

Set to Enabled to enable OS Boot Watch Dog. The options are Enabled and **Dis-abled**.

Timer for Loading OS (Minutes)

This feature allows the user to set the time value (in minutes) for the previous item: OS Boot Watch Dog by keying-in a desired number in the blank. The default setting is 10 (minutes.) (Please ignore this option when OS Boot Watch Dog is set to "Disabled".)

Time Out Option

This feature allows the user to determine what action to take in an event of a system boot failure. The options are **No Action**, Reset, Power Off and Power Cycles.

►System Event Log/System Event Log (List Mode)

These options display the System Event (SEL) Log and System Event (SEL) Log in List Mode. Items include: SEL (System Event Log) Entry Number, SEL Record ID, SEL Record Type, Time Stamp, Generator ID, SEL Message Revision, Sensor Type, Sensor Number, SEL Event Type, Event Description, and SEL Event Data.

| PhoenixBIOS Setup Utility | | | |
|------------------------------|--|-------------------------|-------------------|
| Advanced | | | |
| System Event Log (list mode) | | | |
| Event ID | Sensor Name | Sensor Type | Date/Time Stamp |
| ► 0001 | UBAT | Fan | 000000BC |
| | Lower Non-critical Going Low, Assertion | | |
| ► 0002 | UBAT | Fan | 000000BC |
| | Lower Critical Going Low, Assertion | | |
| ► 0003 | UBAT | Fan | 000000BC |
| | Lower Non-recoverable Going Low, Assertion | | |
| ► 0004 | Fan1 | Fan | 000000BC |
| | Lower Non-critical Going Low, Assertion | | |
| ► 0005 | Fan1 | Fan | 000000BC |
| | Lower Critical Going Low, Assertion | | |
| ► 0006 | Fan1 | Fan | 000000BC |
| | Lower Non-recoverable Going Low, Assertion | | |
| F1 Help | F1 Select Item | -/+ Change Values | F9 Setup Defaults |
| Esc Exit | → Select Menu | Enter Select ► Sub-Menu | F10 Save and Exit |

► Realtime Sensor Data

This feature display information from motherboard sensors, such as temperatures, fan speeds and voltages of various components.

| PhoenixBIOS Setup Utility | | | | | |
|---|-------------|-------------|--------------|-------------|-------------|
| Advanced | | | | | |
| Realtime Sensor Data | | | | | |
| Sensor Type | Sensor Name | Sensor Data | Sensor Units | Lower Limit | Upper Limit |
| Temp | CPU Temp 1 | 0.00 | degrees C | 0.00 | 75.00 |
| | CPU Temp 2 | 0.00 | degrees C | 0.00 | 75.00 |
| | CPU Temp 3 | 0.00 | degrees C | 0.00 | 75.00 |
| | CPU Temp 4 | 0.00 | degrees C | 0.00 | 75.00 |
| | Sys Temp | 31.00 | degrees C | 0.00 | 75.00 |
| Voltage | CPU1 Ucore | 0.00 | Volts | 0.70 | 1.61 |
| | CPU2 Ucore | 1.07 | Volts | 0.70 | 1.61 |
| | 3.3V | 3.24 | Volts | 2.96 | 3.63 |
| F1 Help F4 Select Item -/+ Change Values F9 Setup Defaults Esc Exit ++ Select Menu Enter Select ► Sub-Menu F10 Save and Exit | | | | | |

The following items will also appear:

IP Address,

IP Subnet Mask,

Default Gateway,

MAC Address Byte0,

MAC Address Byte1,

MAC Address Byte2,

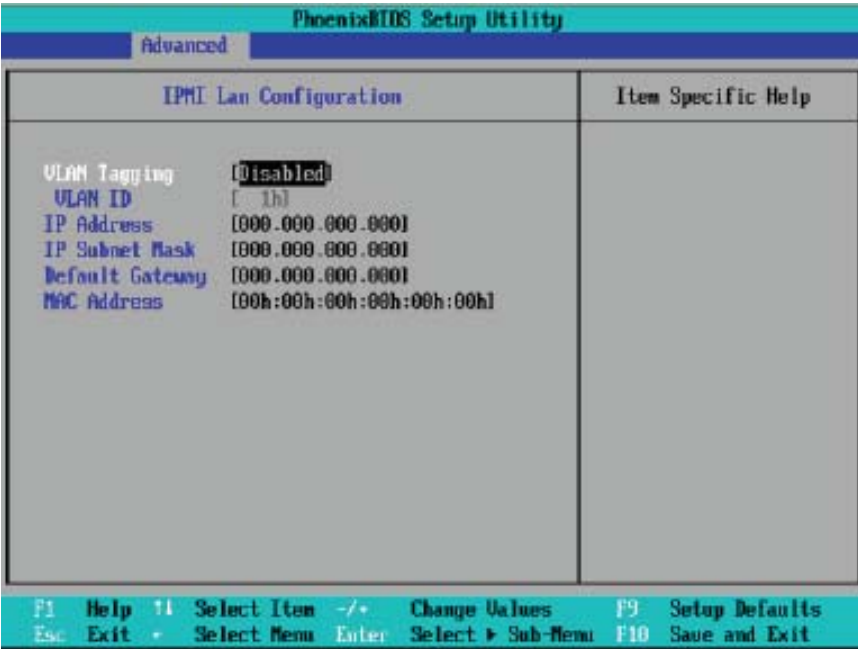
MAC Address Byte3,

MAC Address Byte4,

MAC Address Byte5,

►IPMI LAN Configuration

The following features allow the user to configure and monitor IPMI LAN settings.



VLAN Tagging

Select Enabled to enable Virtual LAN(s) for IPMI connections and allow the user to configure VLAN settings. The options are Enabled and **Disabled**.

VLAN ID

If VLAN Tagging above is set to Enabled, this item allows the user to change the VLAN ID. If VLAN Tagging is disabled, this item will be ignored by the firmware.

IP Address

This item displays the IP address for the IPMI connection detected.

IP Subnet Mask

This item displays the IP Subnet Mask for the IPMI connection detected.

Default Gateway

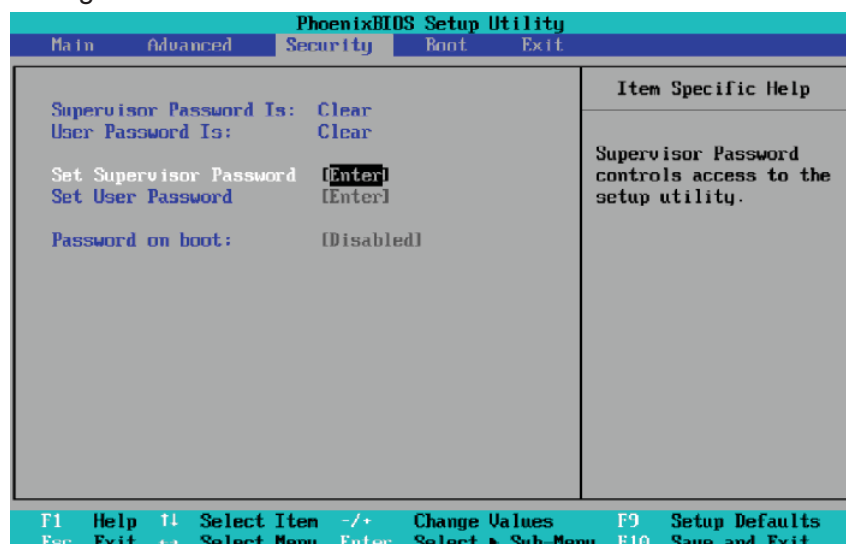
This item displays the Default Gateway for the IPMI connection detected.

MAC Address

This item displays the MAC Address for the IPMI connection detected.

4-5 Security

Choose Security from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. Security setting options are displayed by highlighting the setting using the arrow keys and pressing <Enter>. All Security BIOS settings are described in this section.



Supervisor Password Is:

This feature indicates if a supervisor password has been entered to the system. Clear means such a password has not been used, and Set means a supervisor password has been entered.

User Password Is:

This feature indicates if a user password has been entered to the system. Clear means such a password has not been used, and Set means a user password has been entered.

Set Supervisor Password

When the item Set "Supervisor Password" is highlighted, hit the <Enter> key. When prompted, type the Supervisor's password in the dialogue box to set or to change supervisor's password, which allows access to the BIOS.

Set User Password

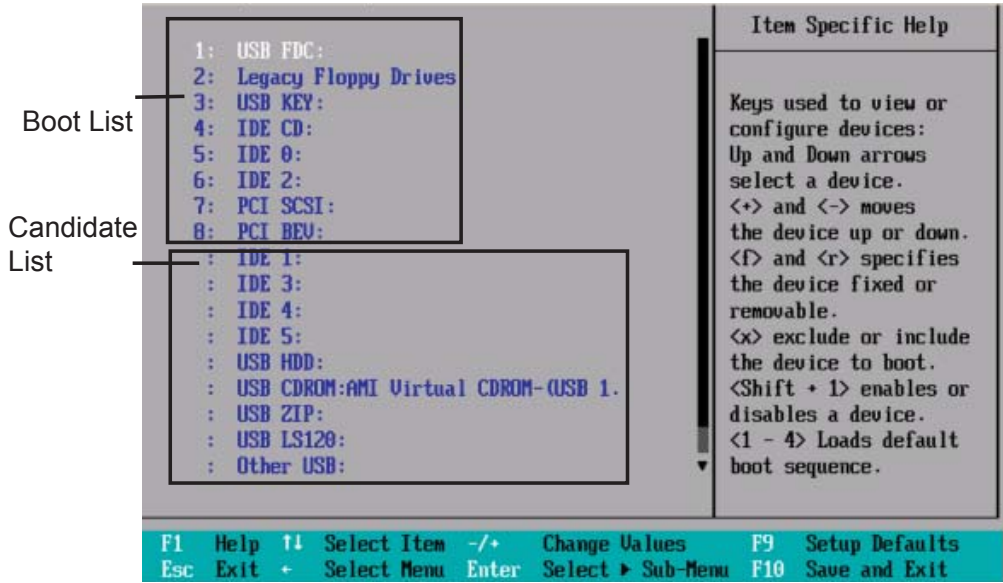
When the item "Set User Password" is highlighted, hit the <Enter> key. When prompted, type the user's password in the dialogue box to set or to change the user's password, which allows access to the system at boot-up.

Password on Boot

This setting allows you to determine if a password is required for a user to enter the system at bootup. The options are **Enabled** (password required) and Disabled.

4-6 **Boot**

Choose Boot from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. See details on how to change the order and specs of boot devices in the Item Specific Help window. All Boot BIOS settings are described in this section.

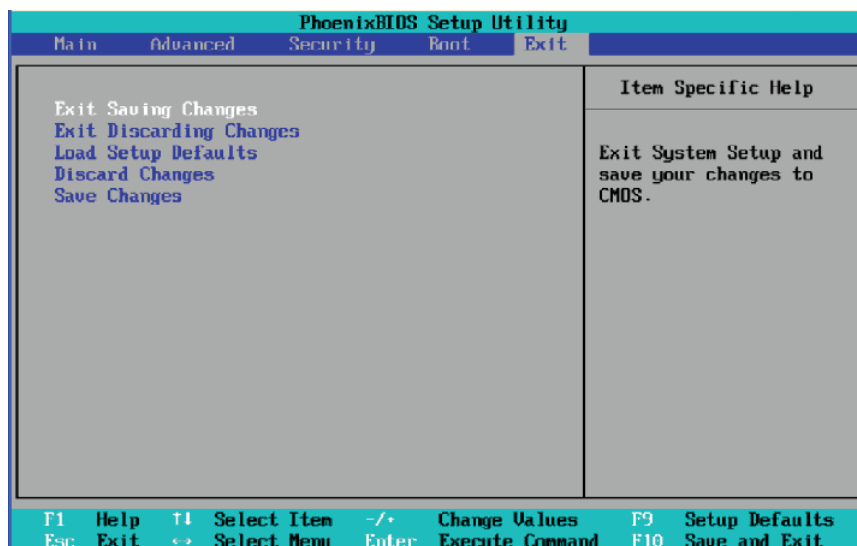


Boot Priority Order/Excluded from Boot Orders

The devices included in the boot list section (above) are bootable devices listed in the sequence of boot order as specified. The boot functions for the devices included in the candidate list (above) are currently disabled. Use a <+> key or a <-> key to move the device up or down. Use the <f> key or the <r> key to specify the type of an USB device, either fixed or removable. You can select one item from the boot list and hit the <x> key to remove it from the list of bootable devices (to make its resource available for other bootable devices). Subsequently, you can select an item from the candidate list and hit the <x> key to remove it from the candidate list and put it in the boot list. This item will then become a bootable device. See details on how to change the priority of boot order of devices in the "Item Specific Help" window.

4-7 Exit

Choose Exit from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. All Exit BIOS settings are described in this section.



Exit Saving Changes

Highlight this item and hit <Enter> to save any changes you made and to exit the BIOS Setup utility.

Exit Discarding Changes

Highlight this item and hit <Enter> to exit the BIOS Setup utility without saving any changes you may have made.

Load Setup Defaults

Highlight this item and hit <Enter> to load the default settings for all items in the BIOS Setup. These are the safest settings to use.

Discard Changes

Highlight this item and hit <Enter> to discard (cancel) any changes you've made. You will remain in the Setup utility.

Save Changes

Highlight this item and hit <Enter> to save any changes you made. You will remain in the Setup utility.

Notes

Appendix A

POST Error Beep Codes

This section lists POST (Power On Self Test) error beep codes for the Phoenix BIOS. POST error beep codes are divided into two categories: recoverable and terminal. This section lists Beep Codes for recoverable POST errors.

Recoverable POST Error Beep Codes

When a recoverable type of error occurs during POST, BIOS will display a POST code that describes the problem. BIOS may also issue one of the following beep codes:

1 long and two short beeps - video configuration error

1 repetitive long beep - no memory detected

1 continuous beep with Front Panel Overheat LED on - system overheat

Notes

Appendix B

BIOS POST Codes

This section lists the POST (Power On Self Test) codes for the Phoenix BIOS. POST codes are divided into two categories: recoverable and terminal.

Recoverable POST Errors

When a recoverable type of error occurs during POST, the BIOS will display an POST code that describes the problem. BIOS may also issue one of the following beep codes:

- 1 long and two short beeps - video configuration error
- 1 repetitive long beep - no memory detected

Terminal POST Errors

If a terminal type of error occurs, BIOS will shut down the system. Before doing so, BIOS will write the error to port 80h, attempt to initialize video and write the error in the top left corner of the screen. The following is a list of codes that may be written to port 80h.

| POST Code | Description |
|-----------|-------------|
|-----------|-------------|

| | |
|-----|---|
| 01h | IPMI Initialization |
| 02h | Verify Real Mode |
| 03h | Disable Non-Maskable Interrupt (NMI) |
| 04h | Get CPU type |
| 06h | Initialize system hardware |
| 07h | Disable shadow and execute code from the ROM. |
| 08h | Initialize chipset with initial POST values |
| 09h | Set IN POST flag |
| 0Ah | Initialize CPU registers |
| 0Bh | Enable CPU cache |
| 0Ch | Initialize caches to initial POST values |
| 0Eh | Initialize I/O component |
| 0Fh | Initialize the local bus IDE |
| 10h | Initialize Power Management |
| 11h | Load alternate registers with initial POST values |
| 12h | Restore CPU control word during warm boot |
| 13h | Reset PCI Bus Mastering devices |
| 14h | Initialize keyboard controller |
| 16h | 1-2-2-3 BIOS ROM checksum |
| 17h | Initialize cache before memory Auto size |

POST Code Description

| | |
|-----|--|
| 18h | 8254 timer initialization |
| 1Ah | 8237 DMA controller initialization |
| 1Ch | Reset Programmable Interrupt Controller |
| 20h | 1-3-1-1 Test DRAM refresh |
| 22h | 1-3-1-3 Test 8742 Keyboard Controller |
| 24h | Set ES segment register to 4 GB |
| 28h | Auto size DRAM |
| 29h | Initialize POST Memory Manager |
| 2Ah | Clear 512 kB base RAM |
| 2Ch | 1-3-4-1 RAM failure on address line xxxx * |
| 2Eh | 1-3-4-3 RAM failure on data bits xxxx * of low byte of memory bus |
| 2Fh | Enable cache before system BIOS shadow |
| 32h | Test CPU bus-clock frequency |
| 33h | Initialize Phoenix Dispatch Manager |
| 36h | Warm start shut down |
| 38h | Shadow system BIOS ROM |
| 3Ah | Auto size cache |
| 3Ch | Advanced configuration of chipset registers |
| 3Dh | Load alternate registers with CMOS values |
| 41h | Initialize extended memory for RomPilot (optional) |
| 42h | Initialize interrupt vectors |
| 45h | POST device initialization |
| 46h | 2-1-2-3 Check ROM copyright notice |
| 48h | Check video configuration against CMOS |
| 49h | Initialize PCI bus and devices |
| 4Ah | Initialize all video adapters in system |
| 4Bh | QuietBoot start (optional) |
| 4Ch | Shadow video BIOS ROM |
| 4Eh | Display BIOS copyright notice |
| 4Fh | Initialize MultiBoot |
| 50h | Display CPU type and speed |
| 51h | Initialize EISA board (optional) |
| 52h | Test keyboard |
| 54h | Set key click if enabled |
| 55h | Enable USB devices |
| 58h | 2-2-3-1 Test for unexpected interrupts |
| 59h | Initialize POST display service |
| 5Ah | Display prompt "Press <ESC> to enter SETUP" |
| 5Bh | Disable CPU cache |

| POST Code | Description |
|------------------|--|
| 5Ch | Test RAM between 512 and 640 kB |
| 60h | Test extended memory |
| 62h | Test extended memory address lines |
| 64h | Jump to UserPatch1 |
| 66h | Configure advanced cache registers |
| 67h | Initialize Multi Processor APIC |
| 68h | Enable external and CPU caches |
| 69h | Setup System Management Mode (SMM) area |
| 6Ah | Display external L2 cache size |
| 6Bh | Load custom defaults (optional) |
| 6Ch | Display shadow-area message |
| 70h | Display error messages |
| 72h | Check for configuration errors |
| 76h | Check for keyboard errors |
| 7Ch | Set up hardware interrupt vectors |
| 7Dh | Initialize Intelligent System Monitoring (optional) |
| 7Eh | Initialize coprocessor if present |
| 80h | Disable onboard Super I/O ports and IRQs (optional) |
| 81h | Late POST device initialization |
| 82h | Detect and install external RS232 ports |
| 83h | Configure non-MCD IDE controllers |
| 84h | Detect and install external parallel ports |
| 85h | Initialize PC-compatible PnP ISA devices |
| 86h | Re-initialize onboard I/O ports. |
| 87h | Configure Motherboard Configurable Devices (optional) |
| 88h | Initialize BIOS Data Area |
| 89h | Enable Non-Maskable Interrupts (NMIs) |
| 8Ah | Initialize Extended BIOS Data Area |
| 8Bh | Test and initialize PS/2 mouse |
| 8Ch | Initialize floppy controller |
| 8Fh | Determine number of ATA drives (optional) |
| 90h | Initialize hard-disk controllers |
| 91h | Initialize local-bus hard-disk controllers |
| 92h | Jump to UserPatch2 |
| 93h | Build MPTABLE for multi-processor boards |
| 95h | Install CD ROM for boot |
| 96h | Clear huge ES segment register |
| 97h | Fix up Multi Processor table |
| 98h | 1-2 Search for option ROMs and shadow if successful. One long, two short beeps on checksum failure |

| POST Code | Description |
|------------------|--|
| 99h | Check for SMART Drive (optional) |
| 9Ch | Set up Power Management |
| 9Dh | Initialize security engine (optional) |
| 9Eh | Enable hardware interrupts |
| 9Fh | Determine number of ATA and SCSI drives |
| A0h | Set time of day |
| A2h | Check key lock |
| A4h | Initialize typematic rate |
| A8h | Erase <ESC> prompt |
| AAh | Scan for <ESC> key stroke |
| ACh | Enter SETUP |
| AEh | Clear Boot flag |
| B0h | Check for errors |
| B1h | Inform RomPilot about the end of POST (optional) |
| B2h | POST done - prepare to boot operating system |
| B4h | 1 One short beep before boot |
| B5h | Terminate QuietBoot (optional) |
| B6h | Check password (optional) |
| B7h | Initialize ACPI BIOS and PPM Structures |
| B9h | Prepare Boot |
| BAh | Initialize SMBIOS |
| BCh | Clear parity checkers |
| BDh | Display MultiBoot menu |
| BEh | Clear screen (optional) |
| BFh | Check virus and backup reminders |
| C0h | Try to boot with INT 19 |
| C1h | Initialize POST Error Manager (PEM) |
| C2h | Initialize error logging |
| C3h | Initialize error display function |
| C4h | Initialize system error flags |
| C6h | Console redirection init. |
| C7h | Unhook INT 10h if console redirection enabled |
| C8h | Force check (optional) |
| C9h | Extended ROM checksum (optional) |
| CDh | Reclaim console redirection vector |

POST Code Description

| | |
|-----|--|
| D2h | Unknown interrupt |
| D4h | Check Intel Branding string |
| D8h | Alert Standard Format initialization |
| D9h | Late init for IPMI |
| DEh | Log error if micro-code not updated properly |

The following are for boot block in Flash ROM**POST Code Description**

| | |
|-----|--------------------------------------|
| E0h | Initialize the chipset |
| E1h | Initialize the bridge |
| E2h | Initialize the CPU |
| E3h | Initialize system timer |
| E4h | Initialize system I/O |
| E5h | Check force recovery boot |
| E6h | Checksum BIOS ROM |
| E7h | Go to BIOS |
| E8h | Set Huge Segment |
| E9h | Initialize Multi Processor |
| EAh | Initialize OEM special code |
| EBh | Initialize PIC and DMA |
| ECh | Initialize Memory type |
| EDh | Initialize Memory size |
| EEh | Shadow Boot Block |
| EFh | System memory test |
| F0h | Initialize interrupt vectors |
| F1h | Initialize Run Time Clock |
| F2h | Initialize video |
| F3h | Initialize System Management Manager |
| F4h | Output one beep |
| F5h | Clear Huge Segment |
| F6h | Boot to Mini DOS |
| F7h | Boot to Full DOS |

* If the BIOS detects errors on 2C, 2E, or 30 (base 512K RAM error), it displays an additional word-bitmap (**xxxx**) indicating the address line or bits that have failed. For example, "2C 0002" means address line 1 (bit one set) has failed. "2E 1020" means data bits 12 and 5 (bits 12 and 5 set) have failed in the lower 16 bits. The BIOS also sends the bitmap to the port-80 LED display. It first displays the checkpoint code, followed by a delay, the high-order byte, another delay, and then the loworder byte of the error. It repeats this sequence continuously.

Notes

Appendix C

Installing Other Software Programs and Drivers

C-1 Installing Drivers other than the Adaptec Embedded Serial ATA RAID Controller Driver

After you've installed the Windows Operating System, a screen as shown below will appear. You are ready to install software programs and drivers that have not yet been installed. To install these software programs and drivers, click the icons to the right of these items.



Driver/Tool Installation Display Screen

Note: Click the icons showing a hand writing on the paper to view the readme files for each item. Click on a computer icon to the right of an item to install an item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before proceeding with the next item on the list.** The bottom icon with a CD on it allows you to view the entire contents of the CD.

C-2 Configuring Supero Doctor III

The Supero Doctor III program is a Web-base management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called the SD III Client. The Supero Doctor III program included on the CDROM that came with your motherboard allows you to monitor the environment and operations of your system. Supero Doctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the Figure below for a display of the Supero Doctor III interface.

Note: 1 The default user name and password are ADMIN.

Note 2: In the Windows OS environment, the Supero Doctor III settings take precedence over the BIOS settings. When first installed, Supero Doctor III adopts the temperature threshold settings previously set in BIOS. Any subsequent changes to these thresholds must be made within Supero Doctor, since the SD III settings override the BIOS settings. For the Windows OS to adopt the BIOS temperature threshold settings, please change the SDIII settings to be the same as those set in BIOS.

Supero Doctor III Interface Display Screen-I (Health Information)



Supero Doctor III Interface Display Screen-II (Remote Control)



Note: SD III Software Revision 1.0 can be downloaded from our Web site at: ftp://ftp.supermicro.com/utility/Supero_Doctor_III/. You can also download SDIII User's Guide at: <http://www.supermicro.com/PRODUCT/Manuals/SDIII/User-Guide.pdf>. For Linux, we will still recommend that you use Supero Doctor II.

Notes

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